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GENERAL

- 768 VAN OYEN (NSM). A technique for the economic evaluation of R & D projects and programmes as an aid in the planning of R & D. *Chimie-Ingenieur-Technik*. 51(7); 1979; 758-9

FOOD PROCESSING AND PACKAGING

- 769 SEPITKA (A). A method and equipment for accelerated drying of food articles in small pieces. *Prumysl Potravin*. 30(5); 1979; 263-5
- The method of accelerated drying of small pieces of food articles is intended for items of vegetables and animal origin and for biological products, drugs, spices, fodder etc. A single belt multizone induced draught drying chamber is described, in the first zone of which also processing operations can be effected. Each zone can have its own set of drying conditions. Drying curves are given, indicating various effects of drying parameters, e.g. specific load, dimensions of pieces, temperature and air speed. AA

FOOD ENGINEERING AND EQUIPMENT

- 770 ATKIN (G) and SHERMAN (P). Further applications of the modified gel rigidity modulus apparatus. *J. Texture Stud*. 10(3); 1980; 253-9
- An apparatus previously used to evaluate the rheological properties of weak milk gels has proved suitable for studying the creep compliance-time behaviour of fruit yoghurt, mayonnaise and fruit jams. All samples exhibited viscoelastic properties. The equipment is recommended for its simplicity of design and operation, and because of its ability to test foods containing fruit pieces. The size and weight of the fruit must be known since these quantities influence the creep compliance behaviour. AA
- 771 BIKRAM KUMAR and AGRAWALA (SP). Falling film evaporators: problems and remedies. *Indian Dairyman*. 32(11); 1980; 847-9
- The various problems like milk loss and burning during electrical tripping/breakdown; scale formation on shell side; frequent damage to the pump seal; leak detection; noise in the plant; and choking of the tubes have been described and the solution indicated. MVG
- 772 BUNGAY (HR). Inexpensive computers aid continuous fermentation. *Chem. Eng. Progr.* 76(4); 1980; 53-4
- Describes the use of computers connected to sensors whose cost is less than that of the instruments it replaces. KAR
- 773 CHEN (EH), HALLENBECK (WH) and HESSE (CS). Random selection of grid squares for scanning by transmission electron microscopy. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1176-9
- 774 JELINEK (V). One-floored malting kiln model SO 180. *Prumysl Potravin*. 30(5); 1979; 294 (Czech)
- 775 PULPYTEL (M) and SKAREK (L). Labelling machine for plastic bottles. *Prumysl. Potravin*. 30(5); 1979; 281-2 (Czech)

- 776 SCHOBINGER (U). New pollution controlled way of distillery waste treatment. *Flussiges obst.* 46(1); 1979; 21-2 (German)
- 777 SCHULZ (N). Mixing and heat transfer in high-consistency media. *Chemie-Ingenieur-Technik.* 51(7); 1979; 693-7 (German)

FOOD CHEMISTRY AND ANALYSIS

- 778 BALTES (W) and SOCHTIG (I). Low molecular ingredients of smoke flavour preparations. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 9-16 (German)
The composition of 12 smoke flavour preparations from different manufacturers was analysed by gas chromatography on glass capillary columns. Seventy compounds were identified by mass spectrometry and the most important representatives of the phenolic fraction were determined quantitatively. Sensory qualities of some characteristic compounds are described. AA
- 779 CHAKRABORTY (HC). Electromagnetic radiations in analytical chemistry. *Sci. Rep.* 17(6); 1980; 378-81
- 780 DABEKA (RW), MCKENZIE (AD) and CONACHER (HBS). Microdiffusion and fluoride-specific electrode determination of fluoride in foods. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1065-9
- 781 DE KEE (D), TURCOTTE (G), FILDEY (K) and HARRISON (B). New method for the determination of yield stress. *J. Texture Stud.* 10(3); 1980; 281-8
A method is proposed for determining the yield stress of liquid and semi-liquid foods. The described technique makes use of a modified Fisher Autotensiometer apparatus. A yield stress range of from 20 dynes/cm² to about 900 dynes/cm² was covered by products such as condensed milk and tomato paste, respectively. The data were compared with the results obtained with a Ferranti Shirley cone and plate viscometer, a Chainomatic Beckers balance and a Thomas-Stormer viscosimeter. With the exception of the data from the latter instrument, the results were in good agreement. AA
- 782 HECKMAN (MM). Analysis of foods for iodine. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1045-9
- 783 KANWAR (KC) and MANOHAR SINGH. Fluoride in biology and medicine. *Sci. Rep.* 17(7); 1980; 444-9
- 784 KHEDR (MGA). The rejection of scale forming ions from solutions of salt mixtures by reverse osmosis. *Chemie-Ingenieur-Technik.* 51(7); 1979; 756-7
- 785 KOLL (P) and METZGER (J). Detection of acetamide in the thermal degradation products of chitin. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 111-3 (German)
Thermal degradation of chitin, which is a constituent of some foods, yielded as main volatile compound acetamide (9% of dry weight), which had possible physiological implications. Thermal analysis showed decomposition beginning at 200 C. AA

- 86 LEDL (F). 4-Hydroxy-2-hydroxymethyl-5-methyl-2,3-dihydrofuran-3-one: A sugar decomposition product? *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 176-8 (German)
- 787 LEDL (F) and SEVERIN (T). Formation of amino reductones from glucose and primary amines. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 173-5 (German)
 Glucose and methylammonium acetate react in hot aqueous solution to give several products. From this reaction mixture 1-methyl-amino-2-hydroxy-propen-3-one can be isolated. In the same manner glucose reacts with butylammonium acetate to yield 1-butyl-amino-2-hydroxy-propen-3-one. These experiments demonstrate that under the conditions of the Maillard reaction aminoreductones are formed from glucose and primary amines. AA
- 788 MAIER (HG) and ROHRDANZ (D). Separation of esters formed of sorbitol and organic acids by high pressure liquid chromatography. *Chem. Mikrobiol. Technol. Lebensm.* 6(5); 1980; 129-30 (German)
 By melting together or by heating aqueous solutions, 4-6 esters of sorbitol and of malic, succinic, citric or malonic acids are formed. These esters may be separated by high pressure liquid chromatography in LiChrosorb RP-18 from the educts and, after repeated chromatography, also from one another. AA
- 789 MARTINOLA (F). Ion exchangers and adsorbers - versatile aids in the chemical industry. *Chemie-Ingenieur-Technik.* 51(7); 1979; 728-36 (German)
- 790 NURNBERG (HW). Modern voltammetric methods in trace chemistry of toxic metals in drinking water, rainwater and seawater. *Chemie-Ingenieur-Technik.* 51(7); 1979; 717-28 (German)
- 791 PICHNARCIK (J), STRIEZOVSKA (H) and BALUCHA (T). More reliable method must be used to evaluate the quality of food products. *Prumysl Potravin.* 30(5); 1979; 295-8 (Czech)
- 792 SMITH (C), VAN MEGEN (W), TWAALFHOVEN (L) and HITCHCOCK (C). The determination of trypsin inhibitor levels in foodstuffs. *J. Sci. Food Agric.* 31(4); 1980; 341-50
 The trypsin inhibitor activity of processed foods can be determined by measuring the loss of activity of added trypsin under standard conditions. An analytical method is described with slight modifications so that large numbers of widely differing samples can be assayed on routine basis. KAR
- 793 TOUCHSTONE (JC), CHEN (JC) and BEAVER (KM). Improved separation of phospholipids in thin layer chromatography. *Lipids.* 15(1); 1980; 61-2
- 794 TRUCKSESS (MV) and STOLOFF (L). Deep solvent trough for thin layer chromatography. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1181-2
- 795 YAMAMOTO (S), WAKABAYASHI (S) and MAKITA (M). Gas-liquid chromatographic determination of tyramine in fermented food products. *J. Agric. Food Chem.* 28(4); 1980; 790-3
 The simple and precise GLC method involves separation of tyramine in fermented foods, purification by eluting through Amberlite GC-120 column, ready conversion into N,O-bis (ethyloxycarbonyl) derivative by reaction with

ethyl chloroformate and subsequently, its analysis by GLC employing 3,4-dimethoxyphenethylamine as an internal standard. On a 1.5% OV-17, 0.2% SP, tyramine got clearly separated from other constituents of the food. The calibration curve for the coefficient of variation ($n=5$) of the values determined fell below 6.2%. The average recovery was 94% in some of the foods examined. BSN

FOOD MICROBIOLOGY

- 796 COSGROVE (RF). Long-term storage of microorganisms used in antimicrobial effectiveness test. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1188-90
- 797 FRANK (HK) and HERTKORN-OBST (U). Evolution of oxygen from hydrogen peroxide by microorganisms as rapid detection method of high microbial counts. *Chem. Mikrobiol. Technol. Lebensm.* 6(5); 1980; 143-9 (German)
Employing a 1% H_2O_2 solution, the electrometric oxygen measurement according to CLARK can be used for the rapid determination of high microbial counts in foods. The O_2 quantity released after 1 or 5 min is recorded as approximate value for the catalase positive bacteria, yeasts and fungi. Antioxidants disturb the measurements. Vegetable or animal tissue not exposed to heat previously leads to wrong positive results. The method is also suitable to determine the number of living germs in yeasts, as a substitute for the determination of dry weight in fungi or to estimate the biomass in surface waters. AA
- 798 KOBURGER (JA) and RODGERS (MF). Effect of glucose concentration on recovery of fungi from foods. *J. Food Prot.* 42(3); 1979; 249-50
- 799 NEISESS (J). Effect of pH and chlorine concentration on activity of *Bacillus thuringiensis* tank mixes. *J. Econ. Entomol.* 73(2); 1980; 186-8
- 800 SANDINE (WE). Roles of *Lactobacillus* in the intestinal tract. *J. Food Prot.* 42(3); 1979; 259-62
Despite the opinion of many scientists and laymen that *Lactobacilli* benefit adult intestinal health, the medical and scientific communities do not accept this as fact. This paper offers possible beneficial and detrimental roles which *Lactobacilli* could play. Healthful roles include those exerted as a result of their presence as members of the intestinal flora as well as their benefits as culture or enzyme preparations. Speculative detrimental effects discussed are nutrient competition, carcinogen activation and detoxification interference (glucuronide hydrolysis). AA
- 801 SATO (Y) and HAYAKAWA (M). Whipping property of the protein isolated from *Hansenula* yeast grown on methanol. *Food Sci + Technol.* 12(1); 1979; 41-6
Whipping property (foam volume and foam stability) of the protein (HP), extracted with 0.5 N NaOH from *Hansenula* yeast grown on methanol, was measured under various conditions and the effect of additives such as NaCl, $CaCl_2$, sucrose, methyl cellulose and polyethyleneglycol on its whipping property were examined. HP was soluble at various pH values excluding the lower solubility range between pH 4 and 5. Foam volume of HP had not changed although foam stability got enhanced, with an increase of the protein concentration. Sucrose enhanced foam volume at all pH stages and of foam stability in acidic region. By the simultaneous addition of sucrose and salts, both foam volume and foam stability increased in the entire pH range tested. AA

802 SHETTY (JK) and KINSELLA (JE). Lysinoalanine formation in yeast proteins isolated by alkaline methods. *J. Agric. Food Chem.* 28(4); 1980; 798-800

803 SPICHER (G), SCHRODER (R) and SCHOLLHAMMER (K). The microflora of sourdough. VII. Communication. Yeast composition of sourdough starters. 2. *Lebensmittel-Unters. Forsch.* 169; 1979; 77-81 (German)

The yeasts which occur in sourdough starters (Reinzuchtsauer) were investigated. The research was carried out with "Reinzuchtsauer" sourdough starters of two different producers. The microorganism content of the "Reinzuchtsauer" (sourdough starters) amounted to 1.7×10^5 to 1.4×10^6 yeasts and 2.0×10^7 to 2.0×10^8 bacteria/g. 44 yeast cultures were isolated from the "Reinzuchtsauer". These could be subdivided into four groups from their morphological and physiological characteristics. As a result of the identification they could be assigned to the species *Candida Krusei* (27 strains), *Saccharomyces cerevisiae* (11 strains), *Pichia saitoi* (2 strains) and *Torulopsis holmii* (4 strains). AA

804 TIWARI (S), ZAIDI (SMM), AGARWAL (R) and SATSANGI (RK). 5-nitro-4(2)(4-oxo-3H-quinazolin-3-yl) benzylidenemalomyureas as antibacterial agents. *J. Indian Chem. Soc.* 57(10); 1980; 1039-40

Since the three types of organic groupings, viz (i) quinazolone, (ii) urea derivatives, and (iii) aryl nitro compounds are known to possess antimicrobial properties some compounds having all the three groupings were synthesized, and tested against *S. aureus*. Five of the compounds were found to be effective against the test organism (sterilization zone 5-15 mm), while three compounds proved to be ineffective. KMD

FOOD ADDITIVES

805 BELJAARS (PR) and RONDAGS (TMM). High pressure liquid chromatographic determination of chloramine-T in food. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1087-91

806 CLYDESDALE (FM), MAIN (JH) and FRANCIS (FJ). Cranberry pigments as colorants for beverages and gelatin desserts. *J. Food Prot.* 42(3); 1979; 196-201

A dry, powdered pigment extract was prepared from dried cranberry pomace by methanol extraction, concentration and spraydrying. The extract was added to a cherry-flavoured beverage mix, and a strawberry-flavoured gelatin dessert mix. Samples stored at 75 F (24 C) had considerable breakdown after storage for 12 weeks, but still showed an acceptable colour. Pigment stability was greatly increased with N₂ flushing and greatly decreased with increasing storage temperature. The pigment extract imparted an astringent flavour. KMD

807 CLYDESDALE (FM), MAIN (JH) and FRANCIS (FJ). Roselle (*Hibiscus sabdariffa* L) anthocyanins as colorants for beverages and gelatin desserts. *J. Food Prot.* 42(3); 1979; 204-7

A dry, powdered, pigment extract was prepared from a roselle liquid concentrate obtained from Trinidad and added to two dry foods: a beverage mix and a gelatin dessert, and evaluated under various temperature and humidity conditions. During a 16-week storage period, colour, flavour and pigment stability were found to be less than those of Red No.2; but these characteristics showed food stability for a storage period up to 4 weeks. Reconstituted products

showed good light and refrigeration stability, but the roselle powder imparted an unacceptable flavour to the products. KMD

- 808 CLYDESDALE (FM), MAIN (JH), FRANCIS (FJ) and HAYES (KM). Effect of anthocyanin preparations as colorants on hygroscopicity of drypack foods. *J. Food Prot.* 42(3); 1979; 225-7

The equilibrium relative humidity isotherm of a cherry beverage base and a strawberry gelatin dessert mix coloured with anthocyanins from grape skins, cranberries and roselle was evaluated against a Red No. 2 control. Also, the water vapour transmission rate of the packaging material was evaluated to determine probable shelf-life. Results indicated that physical parameters, such as hygroscopicity, must be considered in estimating effects of the use of natural colorants in foods as well as the colour and chemical stability normally investigated. AA

- 809 PALMER (KA), SHEU (CW) and GREEN (S). Mutagenicity studies of R-amino salt, a metabolite of amaranth (FD & C RED NO. 2), in mouse lymphoma cells heterozygous at the thymidine kinase locus and in the rat dominant lethal test. *Food Cosmet. Toxicol.* 17(1); 1979; 5-9

The results from the mouse lymphoma assay showed a dose-related increase in mutation frequency compared with values for the negative controls. Giant cells were present in the cultures after treatment and a distinct change of colour was observed when the R-amino salt was dissolved in the tissue-culture medium. In the dominant lethal test, the effect of R-amino salt was not statistically significant. AA

- 810 PHILLIPS (JC), BUTTERWORTH (KR), GAUNT (IF), EVANS (JG) and GRASSO (P). Long-term toxicity study of quillaia extract in mice. *Food Cosmet. Toxicol.* 17(1); 1979; 23-7

Groups of 48 male and 48 female mice were fed quillaia extract in the diet at levels of 0 (control), 0.1, 0.5 or 1.5% for 84 weeks. The no-untoward-effect level from this study is considered to be 0.5% in the diet giving an intake of approximately 0.7 g quillaia extract/kg/day. AA

- 811 STAVRIC (B), CRAIG (J), KLASSEN (R) and WILLES (R). Microdetermination of naphthionic acid in serum and amniotic fluid. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1096-8

- 812 STAVRIC (B), KLASSEN (R) and MILES (W). Gas-liquid chromatographic-mass spectrometric determination of α - and β -Naphthal amines in FD & C Red No.2 (Amaranth). *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1020-6

- 813 WAHLSTROM (B), BLENNOW (G) and KRANJZ (C). Studies on the fate of quinoline yellow in the rat. *Food Cosmet. Toxicol.* 17(1); 1979; 1-3

Quinoline yellow is commonly used for colouring sweets and soft drinks. When fed to rats, it was quantitatively excreted the excretion being mainly faecal. Thus, very little of it is absorbed from the gastro-intestinal tract of the rat. No evidence of metabolism was obtained. KMD

- 814 WELCH (RC) and HUNTER (GLK). Mass spectral characterization of 2,4-disubstituted 1,3-dioxolanes found in flavours. *J. Agric. Food Chem.* 28(4); 1980; 870-2

CEREALS

- 15 JOSEFSSON (E) and MOLLER (T). High pressure liquid chromatographic determination of ochratoxin A and zearalenone in cereals. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1165-8

- 16 MORRISON (WR), TAN (SL) and HARGIN (KD). Methods for the quantitative analysis of lipids in cereal grains and similar tissues. *J. Sci. Food Agric.* 31(4); 1980; 329-40

Methods are described for the extraction and quantification of total lipids in cereal grains and other similar tissues and for the determination of all the major classes of acyl lipid found in these extracts. Total lipids, obtained by direct solvent extraction or after acid hydrolysis are quantified as fatty acid methyl esters (FAME) by GC using heptadecanoate (17:0) as internal standard. Individual lipid classes are separated by TLC; non-polar lipids and glycolipids are measured as FAME by GC while phospholipids are determined from phosphorus distribution. The precision of routine determinations (variations expressed as percentage of mean values) are usually well within the limits: total lipids, 1.5%; major lipid classes, 1.5%; minor lipid classes, 5%. KAR

RICE

- 17 KUMARAVEL (S), SINGARAVADIVEL (K), VASAN (BS) and ANTHONI RAJ (S). Storage of parboiled bran. *J. Oil Technol. Assoc. India.* 12(2); 1980; 49-51

Parboiled rice bran collected from modern rice mill and hullers was stored in gunny bags and polyethylene bags (HDPE of 300 gauge and LDPE 150 gauge) and tin containers for 120 days and the FFA, infestation, microbial load and peroxide value were determined. In gunny bags the FFA increased to 30.3% within 60 days. But, in HDPE and tin containers storing immediately after milling, prevented moisture absorption, infestation, and microbial proliferation. The increase in the FFA content of the oil was only about 7% in 60 days. Infestation was higher in gunny bag stored bran while microbial load was slightly higher in LDPE bags. KMD

- 18 MAZZINI (F), BONANDIN (E), FANTONE (GC) and FOSSATI (G). Conservation of rice. II. Relations between some physical and biochemical parameters. *Il Riso.* 29(1); 1980; 69-78 (Italian)

Six Italian rice varieties were stored for 2 years as paddy. 250 g samples were analyzed, periodically, for NPN, protease activity, protein content and weight of 1000 caryopses of brown rice, weight of embryos, moisture content of rough rice and germinability. Temperature and relative humidity were recorded for the whole storage period. The following results were obtained: 1) germinability of all the varieties was reduced over the 2-year period, ranging from 6.1% for Balilla to 56.1% for Arborio; (2) there was a progressive increase of NPN with increasing temperature, followed by a decrease as the weight of the embryo increased; (3) the weight of the brown rice remained stable; (4) high values of proteasic activity were observed during the summer months; and (5) the total nitrogen content of brown rice remained stable over the 2-year storage period. KMD

- 19 PILLAIYAR (P). Deoiled bran paste for rice bran pelletization. *J. Oil Technol. Assoc. India.* 12(2); 1980; 42-4

Deoiled bran possesses pasting properties. A hot paste can be obtained by cooking deoiled bran flour with 6 parts of water at 90 C, while a cold paste is obtained by alkalization at room temperature. Both types of paste have better gluing properties. If deoiled bran, or its heat and cold pastes, are incorporated in bran pellets, one obtains strong pellets suitable for large-scale solvent extraction. KMD

- 820 PILLAIYAR (P). Inter-relationship between the strength of bran pellet, its extractability and solvent loss. *J. Oil Technol. Assoc. India.* 12(2); 1980; 38-41

Pellets were prepared from parboiled rice bran, with or without the use of various additives, and were subjected to solvent extraction. The causes of poor extractability and solvent loss have been indicated. Strong pellets that do not collapse in the extractor are desirable as they ensure maximum extractability and minimum solvent loss. Assessment of the degree of fines formed in various stages of extraction and the condition of the material bed can form the basis for determining the extraction efficiency and solvent loss in a solvent extraction plant. KMD

- 821 SANTOPRETE (G). Experiences on the conservation of undermilled (or slightly milled) rice. *IL Riso.* 29(1); 1980; 61-7 (Italian)

It is known that under-milled rice cannot be stored for periods long enough to be of commercial interest. Even in a nitrogen atmosphere the storage life of under-milled rice is only about 8 months; after this period, the organoleptic properties of the rice show greater and greater changes. Storage under 96% vacuum (of about 30 Ton) however, can preserve under-milled rice for a period longer than 2 years. KMD

- 822 SOWBHAGYA (CM) and BHATTACHARYA (KR). Simplified determination of amylose in milled rice. *Starch.* 31(5); 1979; 159-63

Previous defatting is essential for correct determination of amylose content in rice by colorimetric iodine method. Since no simplified method of defatting of flour is satisfactory, a simple method involving defatting liquid phase has been developed. The flour is dispersed in diluted alkali, and the dispersion is shaken successively with petroleum ether and carbon-tetrachloride. The aqueous solution is pipetted from top for colour development. The method gives results essentially identical to that given by defatted flour. The colour is developed and read at about pH 7.5 and at 630 nm. AA

- 823 YAMAMOTO (A), FUJII (Y), YASUMOTO (K) and MITSUDA (H). Product specificity of rice germ lipoxxygenase. *Lipids.* 15(1); 1980; 1-5

WHEAT

- 824 BLOKSMA (AH). Effect of heating rate on viscosity of wheat flour doughs. *J. Texture Stud.* 10(3); 1980; 261-9

Doughs were sheared at a constant rate and heated in a cone-and-plate viscometer. As the temperature increased, the apparent viscosity first decreased, passed a minimum, and then increased rapidly presumably due to the swelling of starch granules. If the dough was heated more rapidly, the viscosity had its minimum value at a higher temperature. This is explained by the swelling of starch granules being a rate process. The present experiments explain why in previous work with heating prior to shearing, the minima

in the viscosity versus temperature curves were found at unexpectedly low temperatures. The temperature at which in a standard amylograph experiment the viscosity begins to rise is a fairly good estimate of the temperature at which viscosity has its minimum value during baking. The agreements due to compensating effects of the rate of heating and of the starch concentration. AA

- 825 D'APPOLONIA (BL). Structure and importance of nonstarchy polysaccharides of wheat flour. *J. Texture Stud.* 10(3); 1980; 201-16

Although a minor biochemical component of wheat flour, the nonstarchy polysaccharides have been the subject of investigation by various groups of workers. This review discusses primarily the studies conducted at the Cereal Chemistry and Technology Department at North Dakota State University and covers information pertinent to structure, properties and function of the nonstarchy polysaccharides. AA

- 826 LORENZ (K). Phenolic acids in wheat flour. Effect on dough mixing properties. *Food Sci + Technol.* 12(1); 1979; 31-5

Benzoic acid derivatives of phenolic acids do not affect dough mixing characteristics at levels present in wheat flours. Cinnamic acid derivatives however, showed an effect. Farinograph peak times, departure times and stabilities decrease as the level of phenolic acids in the dough increases. The effects were due to an interacting of the activated double bond of the phenolic acids with radicals in the gluten or starch fractions of flour during dough mixing. Addition of salt (1 or 2%) counteracted the detrimental effects, but only so at low levels (upto 20 ppm) of individual phenolic acids. Mixtures of phenolic acids, as present in wheat flour in free or bound form, produce decreased mixing times and tolerances even with the addition of salt in amounts normally used in bakery products. AA

- 827 SUDARSANAM (M). Production and marketing of wheat problems and prospects. *Indian Miller.* 11(3); 1980; 7-9

Status of wheat production; marketing policy and methods; and storage and handling problems in India are briefly reviewed. Approaches for future improvements are pointed out. MVG

- 828 McDERMOTT (EE). The rapid non-enzymic determination of damaged starch in flour. *J. Sci. Food Agric.* 31(4); 1980; 405-13

The amylose extraction method described is better suited for flours milled from soft wheats than for flours milled from hard wheats. The method however, differs in its sensitivity depending upon the type of damage suffered. KAR

BARLEY

- 829 PRICE (PB) and PARSONS (JG). Neutral lipids of barley grain. *J. Agric. Food Chem.* 28(4); 1980; 875-7

- 830 SALOMONSSON (A-C), THEANDER (O) and AMAN (P). Composition of normal and high-lysine barleys. *Swedish J. Agric. Res.* 10(1); 1980; 11-6

Consistent difference in chemical composition could not be observed in high-lysine and normal barleys. KAR

MILLETS

- 831 LILLEHOJ (EB), CALVERT (OH), KWOLEK (WF) and ZUBER (MS). Aflatoxin variation among corn samples with varying ratios of *Aspergillus flavus* Inoculated/Noninoculated kernels. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1083-6
- 832 SHANNON (GM) and SHOTWELL (OL). Minicolumn detection methods for aflatoxin in yellow corn: Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1070-5
- 833 TUIITE (J) and SCOTT (DH). Rapid screening methods for aflatoxin in corn and groundnut - oil cake with simple machine. *Poult. Her.* 1(20); 1980; 2-3
- 834 WANKHEDE (DB), SHEHNAZ (A) and RAGHAVENDRA RAO (MR). Preparation and physico-chemical properties of starches and their fractions from finger millet (*Eleusine coracana*) and foxtail millet (*Setaria italica*). *Starch.* 31(5); 1979; 153-9

The isolation and physicochemical properties of starches and their fractions from different varieties of finger millets and foxtail millets have been studied. Starches from all the millets exhibited single stage swelling and low solubility. The Brabender viscosities decreased considerably during cooking. Purna starch had the tendency to retrograde considerably during cooling. Native millet starches were susceptible to glucoamylase attack. Amylose content of the millet starches ranged from 15.5 to 17.5%. Successive leeching of starches with water and alkali yielded different amylose components having different molecular weights and β -amylolysis limit, suggesting the heterogeneity of total amyloses. AA

PEARL MILLET

- 835 BAILEY (AV), PICCOLO (B), SUMRELL (G) and BURTON (GT). Some effects of nitrogen fertilizer on the chemical composition of pearl millet grain. *J. Agric. Food Chem.* 28(4); 1980; 866-70

Protein content of pearl millet grain harvested from crops (inbred hybrids TIFT 23DA x TIFT 383) earlier administered with nitrogen fertilizer levels of 12 lb/ acre and 120 lb/acre, showed an increase from 19-55%, although the impact on protein quality was minimal. With low level of fertilizer, protein content varied from 8.8-14.1%, whereas with high levels it was 11.6-20.5%. Mineral content varied to some extent, although crude fibre did not show significant variation. Starch content was, however, inversely related to protein content. BSN

PROSO MILLET

- 836 LORENZ (K). Proso millets. *League Int. Food Educ. Newsl.* June, 1980; 1

SORGHUM

- 837 NIRMALA MURTHY (K) and KOKILAVANI (R). Biodeterioration of stored insect infested jowar (*Sorghum vulgare*) and ragi (*Eleusine coracana*). *Indian J. Nutr. Diet.* 17(6); 1980; 201-4

The biodeterioration changes (moisture; weight/volume, weight loss, kernel damage, frass and insect population, changes in protein; carbohydrate, fat, vitamins-niacin, thiamine and riboflavin and minerals - Ca, P, S, and phytin phosphorus contents and of uric acid content as the index of degree of

insect infestation) were assessed in 5 variety of (i) jowar (Co-4, Co-12, Co-18, Co-19, Co-20) and (ii) ragi (Co-7, Co-10, Co-11, TNAU 9, TNAU 10) infested with *Sitophilus oryzae* and *Tribolium* sp. and stored for 24 month. From the data presented in tables and graph, it is observed that severity of insect infestation was more in (ii) ((a) weight loss 3.0-31.5% (b) kernel damage 12.5-49.0%, (c) uric acid 50-128.5 mg/100g, (d) FFA 12.0-109.2, (e) carbohydrates $67.14 \pm 0.42\%$, (f) fat 1.48 ± 0.47 , (g) protein 10.9 ± 0.151) as compared to data of 0.50-1.0%, 6.0-14.0%, 26.7-55.0 mg/100 g, 25.6-28.0, $68.5 \pm 0.5\%$, $1.3 \pm 0.077\%$ and $6.98 \pm 0.050\%$ for (a), (b), (c), (d), (e), (f), and (g) respectively in (i). BSN

- 38 REICHERT (RD), FLEMING (SE) and SCHWAB (DJ). Tannin deactivation and nutritional improvement of sorghum by anaerobic storage of H₂O-, HCl-, or -NaOH-treated grain. *J. Agric. Food Chem.* 28(4); 1980; 824-9

By imbibing into whole sorghum grains 25% of water, 0.8 NHCl or 0.8N NaOH and storage for 2 days, the tannin content of sorghum decreased from 3.63% to 2.2, 0.6 and 0.1% respectively. By increasing storage period to 9 days, tannin content of water imbibed grains declined to 0.3%. Germination of grain resulted in significant decrease in tannin content. Rat feeding studies revealed that weight gains/feed/grain ratios observed in the experimental animals were on par with those fed with low tannin sorghum (LTS) diet. In most cases, however, apparent digestibility of protein total dry matter and PER showed significant improvement. However, they did not attain the levels observed with LTS diet in most cases. It was found that vanillin-HCl assay for tannin estimation was an adequate predictor for assessment of the nutritional quality of high tannin sorghum subjected to treatment by the three methods. BSN

MAIZE

- 39 McGAUGHEY (Wm H) and DICKE (EB). Methods of applying *Bacillus thuringiensis* to stored corn for moth control. *J. Econ. Entomol.* 73(2); 1980; 228-9

Two practical methods of applying *Bacillus thuringiensis* Berliner to the surface layer of stored corn, treating the grain after the bins were filled or during transfer of the grain with an auger, were compared with a laboratory method, treating grain in a cement mixer. The bacterial deposits resulting from use of each method were equally toxic to insect larvae. Spore counts on individual kernels varied only slightly more with the practical methods than with the laboratory method, and all 3 methods provided sufficient mixing to prevent pockets of over- or under-treated kernels. The auger method was more prone to error in dose rate than were the other methods. AA

- 40 TRUHAUT (R). Two-year oral toxicity and multigeneration studies in rats on two chemically modified maize starches. *Food Cosmet. Toxicol.* 17(1): 1979; 11-7

Two modified maize starches, acetylated distarch adipate and acetylated distarch glycerol, each at a level of 62% in a cooked diet, were fed to groups of Sprague-Dawley-derived rats throughout a 2-year oral toxicity study and multigeneration study (three generations over approximately 2 year). No distinct effect of toxicological importance resulted from feeding rats with either of these modified maize starches at dietary levels of 62% for 2 year. AA

- 841 VINCENT (LE), RUST (MK) and LINDGREN (DL). Methyl bromide toxicity at various low temperatures and exposure periods to angoumois grain moth and Indian meal moth in popcorn. *J. Econ. Entomol.* 73(2); 1980; 313-7
Methyl bromide (MeBr) was evaluated at -6.7, -1.1, 4.4, 10 and 15.6 C and exposure periods of 4, 8, and 12 hour against the metamorphic stages of the Angoumois grain moth, *Sitotroga cerealella* (Olivier), and Indianmeal moth, *Plodia interpunctella* (Hubner), in an 80% load of popcorn. The results indicated that the effectiveness of MeBr in controlling all stages of these 2 species declined rapidly as the temperature dropped below 4.4 C. The larval and pupal stages of the Angoumois grain moth were more tolerant than those of the Indianmeal moth to MeBr fumigation, the pupal stage of both species being the most tolerant. AA
- 842 WHIDDEN (MP), DAVIS (ND) and DIENER (UL). Detection of rubratoxin B and seven other mycotoxins in corn. *J. Agric. Food Chem.* 28(4); 1980; 784-6

PULSES

- 843 HERNANDEZ INFANTE (M) and SOTELO-LOPEZ (A). Nutritive quality of ayacote (*Phaseolus coccineus*) supplemented with methionine at different cooking stages. *Arch. Latinam. Nutr.* 30(1); 1980; 99-116 (Spanish)
The effects of various methods of cooking and drying on the nutritive value of ayacote beans have been reported. The beans were found to be deficient in methionine; after 1% methionine supplementation, this aminoacid was still the limiting one. Heat treatment does not reduce the utilization of the added methionine; hence, the aminoacid may be added at any step of cooking. KMD
- 844 REETA GOEL and VERMA (J). Identification of flatulence factors in some pulses. *Curr. Sci.* 50(3); 1981; 144
Flatulence causing galacto-oligosaccharides of three pulses, green gram (*Phaseolus aureus*), black gram (*Phaseolus mungo*) and lentil (*Lens culinaris*) were determined. The above 3 pulses contained detectable amounts of oligosaccharides and three of them were identified as sucrose, raffinose and stachyose. The fourth one was identified as verbascose on the basis of its R_f value and its proximity with stachyose spot on the chromatogram. The sum of concn of raffinose and stachyose (green gram, 3.57; black gram, 4.32; and lentil, 3.05) was considered as related to flatus producing capacity. Accordingly, the above pulses caused flatulence in the order; black gram; green gram; lentil. (No units have been mentioned in the paper). MVG
- 845 VON BAER (D), REIMERDES (EH) and FELDHEIM (W). Methods for the determination of quinolizidine alkaloids in *Lupinus mutabilis*. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 27-31 (German)

CHICK PEA

- 846 ANON. Effect of legume seeds on serum cholesterol. *Nutr. Rev.* 38(4); 1980; 159-60

MOTH BEAN

- 347 MESHAM (JR), SHASTRI (PN) and RAO (BY). Studies on parched moth beans (*Phaseolus acontifolius*, Jack). *Indian J. Nutr. Diet.* 17(6); 1980; 211-5
- Moth bean (*Phaseolus acontifolius*, Jack.), is similar to green gram and is free from trypsin inhibitor activity. After soaking moth bean for different periods (4,8,12 and 16 hour) it was found that moistening for 4 hour and roasting at 250 C gave a crunchy and acceptable product without the raw beany flavour. Moth bean powder is hygroscopic and may be stored at RH 50% after suitable packaging. BSN

BROAD BEAN

- 848 ANDRES BEZARES (S), MANUEL CUCA (G), ERNESTO AVILA (G) and CARMELO VELAZQUEZ (P). Broad beans (*Vicia faba* L) as an alternate source of protein in chick diets. *Arch. Latinam. Nutr.* 30(1); 1980; 75-87 (Spanish)
- Raw and autoclaved (1.0 kg/cm² for 15 min) broad beans were fed to chickens with and without antibiotic supplementation. Inclusion of flavomycin (at 20 ppm level) produced a significant difference in feed conversion after 21 days. Virginiamycin did not induce any significant change in feed conversion; but both the antibiotics could induce significant changes in body weight, when the beans were autoclaved. When beans were fed at 76% level in the diet, the autoclave treatment resulted in a significantly higher body weight. KMD

GREEN BEAN

- 849 RAMASWAMY (BS), RANGANNA (S) and GOVINDARAJAN (VS). A non-destructive test for determination of optimum maturity of french (Green) beans (*Phaseolus vulgaris*). *J. Food Qual.* 3(1); 1980; 11-23
- Of the different parameters studied weight to length ratio of the French beans is closely related to the sensory characteristics. The beans are very tender upto a W/L ratio of 0.4 g/cm, tender from 0.41 to 0.5 g/cm which is optimal mature stage, mature from 0.51 to 0.6 g/cm, and over-mature thereafter. Warner-Bratzler shear press could also be used for determining the maturity of beans. KAR

LENTIL

- 850 SHINDE (GB) and CHAKRABARTI (CH). Effect of methionine supplementation on the biological value, digestability coefficient and net protein utilization of lentil protein (*Lens esculenta*) in male albino rats. *Indian J. Nutr. Diet.* 17(6); 1980; 205-10

OILSEEDS AND NUTS

- 851 FRANCIS (OJ) Jr. Sample preparation of some shelled tree nuts and peanuts in a vertical cutter-mixer for mycotoxin analysis. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1182-5

PEANUT

- 852 DAVIS (ND), GUY (ML) and DIENER (UL). A fluorometric rapid screen method for aflatoxin in peanuts. *Oils Oilseeds J.* 33(3); 1980; 14-6
- Ground peanuts were extracted with methanol, treated with an acidified solution of zinc acetate and sodium chloride, filtered and diluted with water. Fluorescence of these extracts was compared with the extracts obtained from aflatoxin free peanuts. Out of 160 samples of peanuts, 135 (or 84%) could be identified as either aflatoxin-positive (>15 p.p.b. aflatoxin) or aflatoxin negative (<15 p.p.b. aflatoxin). Although 22 samples (13.6%) were incorrectly labelled as aflatoxin positive, most of them contained mould metabolites other than aflatoxin. 3 samples (1.8%) with aflatoxin contents of 20, 33, and 54 p.p.b. were incorrectly labelled as aflatoxin-negative. KMD

SOYABEAN

- 853 ASMATODDIN (M). Economics of soybean production. *Res. Bull. Marathwada Agric. Univ.* 3(12); 1979; 158-9
- 854 BRINEGAR (CA) and KINSELLA (JE). Reversible modification of lysine in soybean proteins, using citraconic anhydride: characterization of physical and chemical changes in soy proteins isolate, the 7S globulin, and lipoxxygenase. *J. Agric. Food Chem.* 28(4); 1980; 818-24
- 855 ZIVANOVIC (R), TATIC (L), BOLDOCKI (K) and TODOROVIC (M). Microbiological examination of preparations based on soy proteins. *Technol. Mesa.* 20(11); 1979; 321-3 (Serbo-Croat)

RAPE SEED

- 856 DHAWAN (S). Studies on the chemical control of *Sclerotinia* white rot of *Brassica juncea*. *Indian J. Hortic.* 37(2); 1980; 202-5
- Eight systemic and non-systemic fungicides were used for the control of *Sclerotinia* white rot of *Brassica juncea* (or Indian rapeseed plants) benlate, and topsin-M were the most effective fungicides, followed by difolatan, plant-vax brassicol, vitavax, demosan and ceresan. No phytotoxicity was observed with any of the treatments. KMD

COTTON SEED

- 857 CHAKRABARTY (MM), BHATTACHARYYA (D), GAYEN (AK) and MUKHERJEE (N). Studies on acidolysis reaction of cottonseed oil. *Sci. Cult.* 46(10); 1980; 374-5
- Cottonseed oil was acidolysed with stearic acid at different temperature using concentration H_2SO_4 as catalyst. The acidolysed oil was isolated from excess stearic acid and other displaced acids by silica gel column chromatography and the fatty acid compositions of cotton seed oil and acidolysed oil were studied by GLC. It was found that acidolysis incorporated stearic acid into cottonseed oil upto 4.2% at 15 C and 4.4% at 200 C by displacing mainly 3.8% and 4.2% linoleic acid. This also indicated that effect of temperature. On the displacement fatty acids from cottonseed oil by higher saturated acids was negligible. MVG

- 858 MALEVSKI (Y) and MONTGOMERY (MW). Toxic inhibition of some dehydrogenases by methyl sterulate - a naturally occurring substance in cottonseeds. *Arch. Latinam. Nutr.* 30(1); 1980; 88-98

Sterculic acid is a major cyclopropenoid fatty acid (CPFA) that occurs naturally in the oils of plants belonging to the order Malvaceae (which includes the cotton plant). CPFA have caused toxic effects in several species of animals and are known to be co-carcinogens for aflatoxin and 2-acetylaminofluorene in rainbow trout. The effects of methyl sterulate and oleate on crude preparations of rainbow trout liver and rabbit muscle lactate dehydrogenase have been studied. The data obtained suggest that the reduction of the activities of liver dehydrogenases in the rainbow trout fed on a diet containing methyl sterulate was not due to the inhibition of these dehydrogenases by this cyclic fatty acid. KMD

- 859 SHANKARAI AH (B), MADHUSUDAN RAO (D) and KRISHNAMOORTHY (V). Studies on indigenous cottonseed. Part XVII. First cut delinting on "Varalaxmi" cottonseed. *J. Oil. Technol. Assoc. India.* 12(2); 1980; 45-8

Experiments were carried out to evaluate the effect of stud position, saw projection, seed board index, roll density and feed rate on delinting of Varalaxmi cottonseed.. Aspects such as lint yield, power consumption and the capacity of the unit have been discussed. KMD

DEODAR SEED

- 860 RAO (KVSA), LAKSHMINARAYANA (G), GAUTAMA (A), ATCHYUTA RAMAYYA (D), AZEEMODDIN (G) and THIRUMALA RAO (SD). Composition of deodar (*Cedrus deodara*) seed and oil. *J. Oil. Technol. Assoc. India.* 12(2): 1980: 25-7

The seeds of the deodar tree - an important timber tree in India - contain 34% of hull, 11% resin, 5% essential oil and 50% kernel. The kernel contains 49.1% of a fatty oil, whose characteristics are: refractive index at 30 C, 1.4700; acid value 50.2; iodine value (Wijs) 134.4; hydroxyl value 14.0; saponification value 191.4; and unsaponifiable matter 6.0%. The fatty acid composition of the oil, as determined by argentation TLC followed by GLC was: palmitic acid 4.2, stearic 2.3, arachidic 0.5, oleic 49.5, linoleic 28.2, linolenic 9.5, and an unidentified fraction 5.8%. KMD

SUNFLOWER

- 861 ADHIKARI (S) and BHATTACHARYYA (D). Miscella refining of sunflower oil. *J. Oil. Technol. Assoc. India.* 12(2); 1980; 35-7

The effects of parameters, such as oil content in miscella, different strengths of caustic lye, and excess of lye solution, on the refining of sunflower oil miscella (6.65% FFA) were studied. FFA could be removed very effectively by treating sunflower miscella containing 60% oil with 20% Be' caustic soda solution, containing 1% excess dry caustic at 30 C. Considerable improvement in the oil colour was achieved by bleaching refined miscella having 30% oil content at the same temperature with a commercial activated earth and active carbon. KMD

- 862 AFZALPURKAR (AB) and LAKSHMINARAYANA (G). Variations in oil content and fatty acid composition with sunflower head size and shape. *Oils Oilseeds J.* 33(3); 1980; 16-7

Sunflowers of medium (diam. 20 cm) and small (diam. 10 cm) size heads of convex shape yielded seeds with more oil (>44% as against 42%), a higher

degree of unsaturation of the oil (3 V >120, as compared to 100.7) and an oil of greater linoleic acid content (>48% as compared to 27.3%) than large (30 cm diam.) sunflower of convex shape. The oil content (39.9%) of seeds from medium-sized, concave-shaped flower heads was lower than that of flat-shaped or convex flower heads, as was also the unsaturation value (1 V. 112.6) and linoleic acid content (39.3%) of the oil from the seeds of concave-shaped flower heads. KMD

- 863 THOMPSON (TE), ROGERS (CE) and ZIMMERMAN (DC). Sunflower oil quality and quantity as affected by Rhizopus head rot. *Oils Oilseeds J.* 33(3); 1980; 20-22
 Sunflower seeds obtained from plants affected by Rhizopus head rot yielded an oil containing 19.4% of free fatty acids (FFA), while oil from the seeds of healthy plants contained 0.8% FFA. Oil from diseased seeds contained higher palmitic, stearic, arachidic, behenic and lignoceric acids. In addition, diseased plants yielded only 81% as much seed, and 55% as much oil as the healthy plants. KMD

MOWRAH

- 864 SENGUPTA (S), MAJUMDAR (KK), CHAKRABARTY (MM) and BHATTACHARYYA (D). Some observations on storage of mowrah seed. *J. Oil Technol. Assoc. India.* 12(2); 1980; 28-34

An extensive storage study on mowrah seeds has been conducted at 3 different moisture levels -e.g. initial moisture level, 50% of initial level, and zero moisture level - and in 2 types of containers - gunny bags and polythene bags - with and without the application of Al phosphide (Celphos) as a fumigant. The extent of insect and fungal infestations, and the types of insects and fungi that infest mowrah seeds during storage have been reported. A minimum of free fatty acids (2.82% after 180 days of storage) was found in mowrah kernels having zero moisture level and stored in polythene bags. Application of the fumigant only reduced FFA formation, but could not prevent it; however, it was effective in protecting the kernels from insect and fungal infestations. (N.B. Refined mowrah oil can yield a fat that resembles cocoa butter). KMD

TUBERS AND VEGETABLES

- 865 NATH (JP), SUBRAMANIAN (N) and NARASINGA RAO (MS). Isolation and characterization of the major fraction of guar protein. *J. Agric. Food Chem.* 28(4); 1980; 844-7

The major protein fraction of guar isolated in a homogenous form does not contain any phosphorus, while it has 0.8% carbohydrate. It has a sedimentation coefficient of 10.55, mol. weight of 223,000 and an intrinsic viscosity of 0.047 dl/g. The major guar protein fraction consists of not less than six nonidentical polypeptide chains. It has an absorption maximum at 280 nm and a fluorescence emission maximum at 325 nm and is mostly made up of β -structure and random coil. BSN

- 866 NEWSOME (WH) and SHIELDS (BJ). Residues of rotenone and rotenolone on lettuce and tomato fruit after treatment in the field with rotenone formulations. *J. Agric. Food Chem.* 28(4); 1980; 722-4

Rotenone and 6 α , 12 α -rotenolone when sprayed as dust or wettable powder remained at higher levels as residue in lettuce and tomato. The half life

of rotenone applied as dust or wettable powder on lettuce was 2.9 and 3.6 days respectively; while half life of rotenolone was 4.5 or 5.0 days respectively. 0.2-0.3 ppm rotenone remained after 14 days, while only 0.2 ppm of rotenolone persisted on tomato fruit; half life of rotenone was 2.7 days for dust and 0.9 days with wettable powder. After six days of treatment with dust, 0.2 ppm of rotenone was found in tomatoes, while 0.06 ppm of rotenolone was present after 2 days. Both the insecticides were stable to boiling in tomato homogenate. BSN

CARROT

ANDHIWAL (CK) and KISHORE (K). Hydrocarbons, alcohols and phytosterols from the leaves of *Daucus carota*. *Nantes. J. Indian Chem. Soc.* 57(10); 1980; 1044-5

Carrot leaves have been analyzed chemically and their contents of different alkanes, free alcohols and phytosterols have been reported. KMD

BAJAJ (KL) and ARORA (YK). Colorimetric determination of caffeic acid in plant materials. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1160-1

A new colorimetric method is described for determining caffeic acid content in plant materials. Caffeic acid is separated by thin layer chromatography from the alcoholic extract and colour is developed using 0.5% aqueous thiosemicarbazide solution under alkaline conditions. The absorbance is read at 475 nm. Lambert-Beer's law is obeyed in the concentration range 0.37-17.5 μg caffeic acid/mL. The method is reproducible and has been applied to the estimation of caffeic acid in carrot roots. AA

POTATO

ESCHER (F), ROTACH (P), SCHWEINGRUBER (P) and SOLMS (J). A modified method for determining the 'Bluevalue Index' of instant mashed potato products. *Food Sci + Technol.* 12(1); 1979; 27-30

Textural quality of instant mashed potato flakes and granules is influenced by the amount of extracellular watersoluble starch which is usually measured colorimetrically as blue values of an iodine stained extract at 660 m μ . The method for determining blue values was modified to improve reproducibility and to make it applicable not only to dry flakes and granules but also to reconstituted products. The blue value index is not only an estimate for the total amount of watersoluble extracellular starch, but also for the proportion of free amylose in the extracellular starch. As the free amylose fraction seems to be the most important factor in causing textural deficiencies, determination of blue values is suitable to obtain information on textural quality of instant mashed potato products. AA

MAGA (JA) and DESROSIERS (PI). Influence of water hardness on the sensory and physical properties of extruded potato flakes. *Food Sci + Technol.* 12(1); 1979; 17-8

Water with three different hardness levels (0, 100, 300 ppm) was blended at a 20% level with potato flakes, and the mixture processed through a Brabender Laboratory Extruder equipped with a 3/1 screw and a 0.125 inch die opening. Extruder variables evaluated included rpm and temperature. Resulting product yield, diameter, density and sensory properties (colour, acceptability, texture) were measured. Yield and diameter increased with increasing water hardness, temperature and rpm while density decreased. Sensory properties improved

with increased water hardness, temperature and rpm. AA

- 871 MAGA (JA) and SIZER (CE). The fate of free amino acids during the extrusion of potato flakes. *Food Sci + Technol.* 12(1); 1979; 13-4

Dehydration of raw potatoes into potato flakes resulted in significant loss of free amino acids. Losses were also significant during extrusion of potato flakes, especially at elevated extrusion temperatures. At 160 C, approximately 89 percent of the free amino acids were destroyed. AA

- 872 MAGA (JA) and SIZER (CE). Pyrazine formation during the extrusion of potato flakes. *Food Sci + Technol.* 12(1); 1979; 15-6

Only a low level of 2,5-dimethylpyrazine was found in unextruded potato flakes. However, as temperature of extrusion was increased, the level of 2,5-dimethylpyrazine increased and detectable levels of other pyrazines were measured. The total pyrazine level of product extruded at 70 C was 0.051 ppm, whereas at 160 C, 2.50 ppm was measured. Decreasing potato flake moisture levels at high extrusion temperatures dramatically increased pyrazine levels to more than 50 ppm. AA

- 873 MATHEIS (G) and BELITZ (H-D). Multiple forms of soluble monophenol, Dihydroxy phenylalanine: Oxygen Oxidoreductase (E.C. 1.14.18.1) from potato tubers (*Solanum tuberosum*). III. Influence of pH on the molecular weight distribution of enzyme activity in potato juice. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 165-9

Gel chromatography on sepharose and on sephadex was used to separate the soluble phenol oxidase in various potato juices into multiple molecular forms ranging from 36,000 to 800,000 daltons. Adjustment of potato juice from physiological pH (around 6) to pH 4.5 or to pH 7.8 resulted in the predominance of low mol. weight (<150,000 daltons) or high mol. weight (>150,000 daltons) enzyme forms respectively. This suggests association phenomena of subunits. In potato juice of physiological pH and in potato juice adjusted to pH 4.5, all enzyme forms exhibited both monophenol and O-diphenol oxidase activities (tested at pH 6.0). In potato juice adjusted to pH 7.8, considerable less of monophenol oxidase activity (measured at pH 6.0) occurred. This suggests that O-diphenol oxidase is more alkali-stable than monophenol oxidase. The significance of these findings for enzyme purifications and for the *in vivo* action of the enzyme is discussed. AA

- 874 MISRA (SS) and AWASTHI (MD). Residues of systemic insecticides in potatoes. *Pesticides.* 14(8); 1980; 12-6

SWEET POTATO

- 875 PURCELL (AE) and WALTER (WM) Jr. Changes in composition of the nonprotein-nitrogen fraction of "Jewel" sweet potatoes (*Ipomoea batatas* (Lam.)) during storage. *J. Agric. Food Chem.* 28(4); 1980; 842-4

Non protein-nitrogen (NPN) components of "Jewel" sweet potatoes after storage for 107 days consisted of asparagine (61%), aspartic acid (11%), glutamic acid (4%), serine (4%) and threonine (3%). Most of the amino acids showed significant changes in their levels with the progress of storage period. BSN

CABBAGE

- 76 DAZENBICHLER (ME), VANETTEN (CH) and WILLIAMS (PH). Glucosinolate products in commercial Sauerkraut. *J. Agric. Food Chem.* 28(4); 1980; 809-11

CELERY

- 77 GALENSA (R) and HERRMANN (K). Flavone glycosides of the leaves and tubers of celery (*Apium graveolens* L.). *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 170-2 (German)

Apiin (apigenin 7-apiosylglucoside) is the main flavone glycoside of leaves and tubers of celery (*Apium graveolens* L.). Besides, luteolin 7-apiosylglucoside and sometimes chrysoeriol apiosylglucoside and the glucosides of the three aglycones were obtained. AA

LETTUCE

- 878 GREVE (PA) and GREVENSTUK (WB). Gas-liquid chromatographic determination of bromide ion in lettuce. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1155-9

TOMATO

- 879 ARCHER (TE) and STOKES (JD). Residue analysis of β -Naphthoxyacetic acid and β -Naphthol on field-sprayed tomatoes by high-pressure liquid chromatography. *J. Agric. Food Chem.* 28(4); 1980; 877-80

A wettable powder formulation of 42 and 84 ppm active ingredient β -naphthoxyacetic acid (BNOA) and its metabolite (β -naphthol) was sprayed on tomato blossoms in the field. After 5-10 days of application, residues of BNOA dropped to negligible levels and no β -naphthol residues were detected (<0.01 ppm). The harvested tomato fruit in all the experiments contained <0.01 ppm of BNOA and β -naphthol. BSN

- 880 HERRMANN (K). Constituents of tomatoes. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 179-200 (German)

In this review the known constituents of red ripe tomatoes; sugars, polysaccharides, proteins, amino acids, amines, lipids, acids, volatiles, carotenoids, vitamins, minerals, phenolics, steroidal glycoalkaloids, enzymes and growth regulators are discussed. AA

CUCURBIT

- 881 IIDA (T), JEONG (TM), TAMURA (T) and MATSUMOTO (T). Identification of chondrillasterol in two cucurbitaceae seed oils by Proton Nuclear Magnetic Resonance Spectroscopy. *Lipids.* 15(1); 1980; 66-8

MUSK MELON

- 882 PANDEY (RS), BHARGAVA (SN), SHUKLA (DN) and KHATI (DVS). Chemical control of *Fusarium* fruit rot of muskmelon. *Indian J. Hortic.* 37(2); 1980; 208-9
- It was observed that musk melons (*Cucumis melo* L.) in the Allahabad market were affected by a fruit rot caused by *Fusarium semitectum* Sacc., in the months

of May and June 1979; the disease spoiled 20-25% of the fruits. The effectiveness of benlate and thiabendazole against this type of fruit rot was tested. It was found that fruits dipped in the thiabendazole formulation Tecto-40 used at a concentration of 1000 p.p.m. were not affected when subsequently inoculated with the disease-causing organism. KMD

DUCK WEED

- 883 RUSOFF (LL), BLAKENEY (EW) Jr. and CULLEY (DD) Jr. Duckweeds (*Lemnaceae* family). A potential source of protein and amino acids. *J. Agric. Food Chem.* 28(4); 1980; 848-50

FRUITS

- 884 BENK (E). Some more overseas fruits offered on the domestic market. *Flussiges obst.* 46(5); 1979; 180-2 (German)
- 885 NEUMANN (HJ). Extrusion of homogeneous pastes from small samples of dried fruit. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1162-5
- 886 WAGER (B). Report on experiences with the combined process of pressing and extraction, system Bucher, in the 1978 season in Switzerland. *Flussiges obst.* 46(5); 1979; 164-8 (German)

Experiences with the combined Bucher press and leaching systems in two Swiss fruit-processing factories have been discussed. The yields obtained and the analytical data have been reported. They show that the Bucher pomace leaching process is both economical and efficient for producers who are concerned with quality. The disadvantages of the diffusion processes have not been noticed in the Bucher system. KMD

GRAPE

- 887 KAHN (GS) and DHILLON (BS). Effect of CCC on storage of Perlette grapes. *Indian J. Hortic.* 37(2); 1980; 132-5
- The growth regulator CCC (dichloro-ethyl, trichloromethyl, ammonium chloride) was applied as a dip to bunches of Perlette grapes at the start of the second rapid-growth stage of berry development, in three doses (i), 2000, (ii), 3000 and (iii) 4000 p.p.m. The grapes were stored at 30-37 C and 85-90% RH. (i) was effective in reducing physiological loss in weight berry rot, and berry shatter. (iii) showed much better values for TSS total sugars and reducing sugars but the reverse was true for non-reducing sugars. The acidity did not show much change, except a marked decrease at (i). KMD
- 888 WILLIAMS (PJ), STRAUSS (CR) and WILSON (H). Hydroxylated linalool derivatives as precursors of volatile monoterpenes of muscat grapes. *J. Agric. Food Chem.* 28(4); 1980; 766-71

BANANA

- 89 DRAWERT (F) and VELLIOS (A). On the electrophoretic differentiation and classification of proteins. XI. Isoelectric focusing of banana proteins during the climacteric phase. *Chem. Mikrobiol. Technol. Lebensm.* 6(5); 1980; 150-8 (German)

Cavendish and *Gros Michel* bananas were matured in a climatic chamber. Depending on the formation of CO₂, samples were taken to isolate and investigate the proteins by isoelectric focusing. The distribution of the protein patterns in the pulp and skins shows distinctly that the climacteric increase of respiration marks a turning point in the composition of proteins. AA

CITRUS

- 890 BATRA (RC), BINDRA (OS) and SOHI (BS). Relative efficacy of some pesticides in the control of citrus pests. *Indian J. Hort.* 37(2); 1980; 195-201

Three pesticides were tested for their effectiveness against citrus psylla, mite, aphid, and leaf miner. Dimethoate (0.04%) had a slight edge over malathion (0.05%) which in turn proved to be better than fenitrothion (0.04%). Mixtures of pesticides were also tested, and among them 0.03% malathion + 0.1% DDT was superior to 0.04% endosulphan or 0.02% endrin. KMD

- 891 DRAWERT (F), PIVERNETZ (H), LEUPOLD (G) and ZIEGLER (A). Column and thin-layer chromatographic separation and spectrophotometric estimation of rutin, hesperidin and naringin, particularly in citrus fruits. *Chem. Mikrobiol. Technol. Lebensm.* 6(5); 1980; 131-6 (German)

Oranges, grapefruits, lemons, dessert grapes, and grapes were separated into the fractions, juice, pulp and skins, by peeling, juice extraction and centrifugation. After homogenization with methanol, the bioflavonoids, rutin, hesperidin and naringin, were extracted from the pulp and the skins. Liquid chromatography was employed to separate the flavonoids from other constituents of the juices and the extracts. The methanol eluates so obtained contained flavonoids which were then separated by thin-layer chromatography. After elution from the layer material, rutin was estimated by spectrophotometry at 358 nm, and hesperidin and naringin at 284 nm. Because of the good separation and high yields of bioflavonoids so obtained, the results differed quite remarkably from the values obtained by other methods of estimation. KMD

- 892 TOYODA (M), OGAWA (S), ITO (Y) and IWAIDA (M). Gas-liquid chromatographic determination of thiourea in citrus peels. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1146-9

MANGO

- 893 GHOLAP (AS) and BANDYOPADHYAY (C). Fatty acid biogenesis in ripening mango (*Mangifera indica* L. var. Alphonso). *J. Agric. Food Chem.* 28(4); 1980; 839-41

Studies on fatty acid biogenesis in the ripening mango (var. Alphonso) with the aid of (2-¹⁴C) acetate and (1-¹⁴C) palmitic acid have revealed that incorporation of (2-¹⁴) acetate was maximum into palmitic acid, while it was to a lesser level in palmitoleic acid. The radioactivity of (1-¹⁴C) palmitate could, however, be recovered essentially in the hydroxyfatty acids. BSN

- 894 VAJENDER RAO (D), VINOD KULKARNI, AKULA RAMESHWAR and RAO (SN). On the quality of off-season mango fruits and its improvement. *Sci. Cult.* 46(7); 1980; 267-8

Dipping of off season mangoes in CEPA (2-chloroethyl phosphonic acid) in the form of 'Ethrel' at 1000-4000 p.p.m. concentration and polaris (N, N-bis (phosphonomethyl) glycine) and ripening in open at room temperature to improve quality of fruits were investigated. CEPA (+ wetting agent Teepol) treated fruits ripened in 3-6 days as against 9-12 days with controls and external colour developed rapidly. The incidence of diseases in treated fruits was less. Preharvest dip in 5% polaris and harvesting 10 days later and ripening in paddy straw in September increased the total sugars treated and untreated while the non reducing sugar fraction remained. Unchanged acidity of the polaris treated fruit was less than the controls. MVG

PEACH

- 895 WONG (DWS) and LUH (BS). Changes of sugar profiles in canned clingstone peaches. *J. Food Qual.* 3(1); 1980; 35-45

Clingstone peaches canned with various sucrose combinations were stored at 1, 20 and 30 C for 12 months. Storage at 30 C resulted in a rapid decrease in sucrose and increase in fructose and glucose, but at lower temperature of storage these changes took place at a slower rate. Sugar profiles were also dependent on the initial concentration of the sugar components, time of storage and acidity of the canned peaches. The concentration of maltose showed great fluctuation during storage. KAR

APPLE

- 896 DOUSSE (R). Fruit extraction and continuous fining. 2. A few fundamental aspects of solid-liquid extraction in the case of apples. *Flussiges obst* 46(3) 1979; 78-82 (German)

The essential parameters of the solid-liquid-extraction are: raw material (shape, texture, effective area and compactness of slices), denaturization of cells and diffusion. The process can be divided into the period of starting and the real diffusion. Three methods of mass transfer of the soluble occur: the wash out, the flow of solvent and the diffusion, influenced by effects of compression. The performance of the continuous DDS countercurrent principle is dependent from the ratio of solide-liquide phase in the extractor, the temperature control to influence denaturation and diffusion-coefficients, the density of raw material and the holding time in the unit. AA

- 897 PETRELL (RJ), MOHSENIN (NN) and WALLNER (S). Dynamic mechanical properties of the apple cortex in relation to sample location and ripening. *J. Texture Stud.* 10(3); 1980; 217-29

Compressive complex moduli were determined for two cultivars of apples at two ripeness stages by subjecting cylindrical tissues from various locations within the apple to sinusoidal stress. The complex moduli varied within sampling regions and with regional sampling depths. They also varied with the degree of ripeness, but only at certain storage temperatures and in certain sampling regions of the fruit. The data analysis showed that the sinusoidally varying stress and strain test and the Magness Taylor pressure test did not measure the same mechanical properties and that apparently the complex modulus was influenced by changes in the cellular structure of the fruit tissues. AA

GUAVA

- 898 GUPTA (VK) and MUKHERJEE (D). Prolonging shelf-life of *Allahabadi Safeda* guava fruits with a morphactin and benomyl. *Indian J. Hortic.* 37(2); 1980; 163-6

Guava fruits (var. *Allahabadi Safeda*) were given dip treatments with chlorfurenol methyl ester 74050 (a morphactin) and benomyl both separately and in combination. Morphactin at 100 p.p.m. effectively controlled cumulative physiological loss in weight and chlorophyll breakdown, while benomyl brought down the percentage of rotting. Their combined application was most effective in increasing the shelf-life of guava fruits. KMD

LITCHI

- 899 JOHNSTON (JC), WELCH (RC) and HUNTER (GLK). Volatile constituents of litchi (*Litchi chinesis* Sonn.). *J. Agric. Food Chem.* 28(4); 1980; 859-61

Forty two volatile components of litchi (*Litchi chinesis* Sonn.) have been identified and conformed by employing Gc-Ms techniques. Of them, the major volatiles are made up of β -phenethyl alcohol, its derivatives and terpenoids. Although an additional compound with a mass spectral pattern typical of organosilicon was detected, it could not be identified. BSN

SUGAR, STARCH AND CONFECTIONERY

SUGAR

- 900 BERGNER (KG) and SABIR (DM). The proteins of honey. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 159-64 (German)

The amylase of a pine honey (from *abies* sp) was isolated by hydrophobic interaction chromatography. Seven components were separated by means of disc-electrophoresis: their amylase activity could not be exactly determined. In contrast, analytical and preparative isoelectric focussing furnished 11 and 13 components respectively. All these components were active, the main activity being restricted to 4 bands. Compared to amylases of other origin the honey amylase were focussed only in the acidic region. That it is now possible to determine the origin of the components by comparison with other honeys. AA

- 901 MANGAL SINGH. Introduction of modern technology in Indian sugar factories. *Indian Sugar.* 30(5); 1980; 229-35

The article deals with bagasse as a potential fuel source and the processes that are needed to make it fuel worthy, and the economics of its utilization. MVG

- 902 RAI (Y), SINGH (D), SINGH (KDN), PRASAD (CR) and PRASAD (M). Utilisation of waste product of sugar industry as a soil amend *vis-a-vis* for reclamation of saline-sodic soils. *Indian Sugar.* 30(5): 1980: 241-4

Application of sulphitation press mud for reclaiming saline-sodic soils and increasing sugar yields particularly in the Bihar (India) has been reviewed. MVG

MOLASSES

- 903 GODSHALL (MA), ROBERTS (EJ) and LEGENDRE (MG). Identification of volatile constituents responsible for characteristic molasses aroma by unconventional gas chromatography. *J. Agric. Food Chem.* 28(4); 1980; 856-8

STARCH

- 904 BORUCH (M) and PIERZGALSKI (T). Retrogradation of amylose in solutions of enzymatically liquefied starch. *Starch.* 31(5); 1979; 149-52 (German)
- 905 BOYER (EW), INGLE (MB) and MERCER (GD). Isolation and characterization of unusual bacterial amylases. *Starch.* 31(5); 1979; 166-71
 Comparison of the pH and temperature profiles of different *Bacillus* species amylases demonstrates that amylases have evolved in a single genus in such a way that they can function optimally at almost any pH value and temperature. The properties of these amylases reflect extensive microbial adaptation and demonstrate the wide variety of enzymes potentially available for biochemical processing. AA
- 906 MARCHANT (JL) and BLANSHARD (JMV). Anisotropic light scattering by a population of starch granules. *Starch.* 31(5); 1979; 146-8
- 907 PAUL COLONNA (P) and MERCIER (C). Leguminosae starches : Aspect, composition, structure, and physico-chemical properties. *Food Sci + Technol.* 12(1); 1979; 1-12 (French)
 Starch content of horsebeans varies from 30 to 43 per cent of smooth-peas from 43 to 48 per cent and of wrinkled peas from 32 to 37 per cent. Starches from Leguminosae exhibit c-type x-ray diffraction pattern. Amylose and amylopectin are in the same ratio and have the same properties in horsebean and smooth-pea starches as in cereals starches. Starch from wrinkled-seeded pea contains twice as much amylose; its amylopectin fraction is contaminated with branched amylose of short chain length, like in amylo maize starch. During biosynthesis, the sucrose-to-starch conversion has not been adequately defined. These starch granules have high gelatinization temperatures. Tropical leguminosae starches have the same resistance to hydrothermic treatments. AA
- 908 WESTHOFF (RP), KWOLEK (WF) and OTEY (FH). Starch-polyvinyl alcohol films. Effect of various plasticizers. *Starch.* 31(5); 1979; 163-5
 Various polyols were evaluated as plasticizers for starch polyvinyl alcohol films. Glycol glycoside, an experimental polyol made from starch and ethylene glycol and sorbitol were highly effective plasticizers alone and in combination with small amounts of glycerol. Glycol glycoside is an especially attractive plasticizer because of its low production cost. Glucose and sucrose performed well in combination with glycerol or sorbitol. AA

BAKERY PRODUCTS

- 909 SEKHON (KS), GILL (KS), SAXENA (AK) and SANDHA (GS). Studies on the bread-cookie and chapati making properties of some high-yielding varieties of triticale. *Indian Miller*. 11(3); 1980; 29-40
- 4 high-yielding strains of triticale (TL 238, TL 257, TL 319, TL 419) were evaluated for physico-chemical characteristics (protein, Pelshenke value, sedimentation value, diastatic activity, reducing sugars, non-reducing sugars and total sugars) and farinographic characteristics (water absorption, mixing, arrival and departure times, stability, tolerance index and time of break). As compared to wheat, the triticale variety had higher protein content, diastatic activity and total sugars but lower sedimentation values, Pelshenke values, mixing time and water absorption. The variety showed poorer bread and chapati making qualities but had better cookie making qualities. It was also shown that blending of triticale with wheat (50:50 ratio) gave better bread and chapati making qualities. Triticale showed higher protein efficiency ratio than maize or wheat. MVG
- 910 BULENA (V). Application of the theory of similarity to the continuous dough mixing and developing process. *Prumysl Potravin*. 30(5); 1979; 259-63 (Czech)
- The third part of a series of papers on modelling of the dough mixing-developing process presents the procedure of calculation of equations for the conversion of process parameters of the mixing-developing process from a periodical model to a continuous industrial scale mixer-developer with the requirement of safeguarding a given quality of the mixed-developed dough. The theoretical equations have been verified for the TOPOS T 400 continuous dough mixer-developer and for the laboratory scale model. AA

SPAGHETTI

- 911 DONNELLY (BJ). Pasta regrinds: Effect on spaghetti quality. *J. Agric. Food Chem.* 28(4); 1980; 806-9
- Blending regrinds with semolina for preparation of spaghetti was not found suitable beyond 15-20% level as it may lead to deleterious effect on colour and cooking loss in spaghetti. BSN

MILK AND DAIRY PRODUCTS

- 912 CHOPRA (P), AJIT SINGH and KALRA (MS). Occurrence of *Bacillus cereus* in milk and milk products. *Indian J. Dairy Sci.* 33(2); 1980; 248-52
- Analysis of 43 food samples has revealed that *Bacillus cereus* had 100% incidence in milk, meat and meat products, where as only 75% samples of milk products were positive. Of the 25 isolates tested for pathogenicity (out of 64 isolated) only 6 showed fluid accumulation. The fluid volume to length ratio was from 0.6-1.30. For 25 isolates of *B. cereus*, antibiotic sensity was studied. BSN
- 913 GHODEKER (DR), RANGANATHAN (B) and DUDANI (AT). Yeasts and moulds in indigenous milk products. *Indian J. Dairy Sci.* 33(2); 1980; 255-9
- One hundred and eighty five samples comprising of 15 Khoa, 60 burfi and 50 pera were collected from local shops and analysed for their yeast and

mould contents. Yeasts and moulds in khoa ranged from 30-6500/g, while in burfi and pera, they ranged from 20-3700/g and 30-4000/g respectively. BSN

- 914 KOHK (DA), LADKANI (BG) and MULAY (CA). Comparative physico-chemical changes in some constituents of special milks and dahi obtained from them. *Indian J. Dairy Sci.* 33(2); 1980; 219-22

In all types of boiled milk and dahi, maximum decrease in titratable acidity was observed. pH of dahi from boiled milk was less than that of dahi from pasteurized milk. More amount of diacetyl was present in dahi from boiled milk than from dahi from pasteurized milk. Curd tension was reduced by boiling milk, while it increased in dahi as compared to pasteurized milk samples. Relative viscosity of boiled milk dahi was more as compared to pasteurized milk dahi. BSN

MILK

- 915 ABICHANDANI (H) and SARMA (SC). Mechanically prime-moved bulk milk cooler. *Indian Dairyman.* 32(11); 1980; 845-6

The bulk cooler developed by the National Dairy Research Institute, Karnal India, has been described. This 3 ton capacity plant cools 500 litres of milk from 40 C to 4 C in 3 hours. MVG

- 916 BANDYOPADHYAY (AK), TANEJA (HK) and GANGULI (NC). Extent of inactivation of xanthine oxidase in milk during processing and gastric digestion. *Food Sci + Technol.* 12(1); 1979; 19-22

Heating milk or recombined milk at 80-82 C/15s inactivated about 90 per cent of the enzyme activity, whereas the enzyme was irreversibly denatured, when milk was heated at or above 82 C/15s. The activity decreased sharply with lowering of pH between 5.0 and 3.0 and below pH 3.0. *In vivo* milk feeding experiments with rats revealed that activity of both xanthine oxidase and alkaline phosphatase in the stomach contents dropped sharply with period of feeding. Xanthine oxidase was more stable in the stomach than alkaline phosphatase and remains active for more than six hours after milk ingestion. The body weight of the rats and pH of the stomach contents were negatively correlated with the enzyme activity. AA

- 917 BEAN (A). Milk bottle trippage. *Indian Dairyman.* 32(11); 1980; 833-5

A few guidelines for calculation of trippage of milk bottles are suggested. MVG

- 918 BHAVADASAN (MK) and GANGULI (NC). Free and membrane-bound xanthine oxidase in bovine milk during cooling and heating. *J. Dairy Sci.* 63(3); 1980; 362-7

- 919 BORSETTI (AP). Determination of pentachlorophenol in milk and blood of dairy cattle. *J. Agric. Food Chem.* 28(4); 1980; 710-4

The rapid analytical method for determination of Pentachlorophenol (PCP) in milk (the method for estimation in blood is also similar) from cattle employs a hexane/2-propanol extraction, base partition and wash, reacidification and extraction with hexane. The PCP is estimated as underivatized, by GLC on a 2% SP 1000/1% H₃PO₄ column with electron capture detection. The identity of PCP is confirmed by treatment with diazomethane and GC of pentachloroanisole derivative. Recoveries were >90% for milk, while for blood it was >87% over a range of fortification levels. The quantification limit is 4 ppb for milk

and 10 ppb for blood. Limit for detection of both is 1.0 ppb. BSN

- 920 CHOUDHERY (AK) and PATEL (RD). Convenient polypacks vs conventional bottles - A techno-economic study on milk packaging. *Indian Dairyman*. 32(11); 1980; 839-43

Results of a techno-economic study giving data on various items of costing of milk distribution in conventional bottles and single service poly-packs are presented. MVG

- 921 GREEN (M), BEN-HUR (E), RIKLIS (E), GORDIN (S) and ROSENTHAL (I). Application of mutagenicity test for milk. *J. Dairy Sci.* 63(3); 1980; 358-61

- 922 JACOBSON (RE), HAMMOND (JW) and GRAF (TF). Pricing grade A milk used in manufactured dairy products. *J. Dairy Sci.* 63(3); 1980; 506-11

- 923 MEHTA (RS) and BASSETTE (R). Volatile compounds in UHT-sterilized milk during fluorescent light exposure and storage in the dark. *J. Food Prot.* 42(3); 1979; 256-8

When ultra-high-temperature sterilized milk (140 C for 3.5 sec) was exposed to fluorescent light over a 30-day period at 22 C, acetaldehyde, propanal, pentanal and hexanal increased in concentration. On storage of the milk in the dark, after a 2-week period of light exposure, the same compounds decreased in concentration. No characteristic patterns were noticed in the other chromatographic peaks. When a five-fold diluted distillate of light-exposed milk was added to normal milk, a taste-panel criticized the milk was pronounced oxidation, tallowy or oily. AA

- 924 OUDERKIRK (LA). *Bacillus stearothermophilus* disk assay for detection of residual penicillins in milk: Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 985-8

This method is a modification of an earlier procedure developed for the International Dairy Federation. Whole milk samples spiked at low levels with ampicillin, cephalixin, cloxacillin, and penicillin G were sent frozen to 11 collaborating laboratories with instructions to assay them promptly according to the method provided. Five of the laboratories reported inconclusive results due to technical difficulties encountered with the method. The 6 remaining laboratories all detected levels of 0.005-0.008 µg or unit/mL for penicillin G, ampicillin, and cephalixin and 0.05-0.08 µg/mL for cloxacillin. The most commonly used official methods, the *Sarcina lutea* (*Micrococcus luteus*) cylinder plate method and the *Bacillus subtilis* paper disk method, can detect levels of 0.01 and 0.05 unit penicillin G/mL, respectively. The *B. stearothermophilus* method is rapid, simple to perform, and more sensitive than present official methods. The method has been adopted as official first action for the detection of penicillins in milk. AA

- 925 PATTON (S), KELLY (JJ) and KEENAN (TW). Carotene in bovine milk fat globules: Observations on origin and high content in tissue mitochondria. *Lipids*. 15(1); 1980; 33-8

COW MILK

- 926 KIM (HS), GILLILAND (SE), VON GUNTEN (RL) and MORRISON (RD). Chemical test for detecting wheat pasture flavour in cow's milk. *J. Dairy Sci.* 63(3); 1980; 368-74

BUFFALO MILK

- 927 SONI (PL), GANGWAR (PC), BAHGA (CS), SRIVASTAVA (RK) and DHINGRA (DP). Effect of environmental cooling on milk yield and certain milk constituents in buffaloes. *Indian J. Nutr. Diet.* 17(6); 1980; 220-7

45 normal lactating buffaloes were grouped into Group-I (control), Group-II (showers) and Group-III (Wallowing). The study was conducted from May-June as period 1 (hot and dry) and July-September as period 2 (hot and humid). The average values of milk yield (kg) for the 3 groups were 7.459, 7.589, 8.506 for period 1 and 6.772, 6.988, 7.296 respectively for period 2. The values of milk fat (%) were 7.593, 7.655, 7.426 and 7.976, 7.982, 7.700 respectively, for period 1 and period 2. The values of milk lactose were 4.285, 4.446, 4.583, and 4.402, 4.521, 4.768 respectively for period 1 and period 2. The values of chloride (meq/l) for the 3 groups were 33.189 ± 2.963 , 31.125 ± 3.007 , 30.535 ± 2.864 and 35.972 ± 2.981 , 31.854 ± 2.717 , 31.703 ± 3.002 for period 1 and period 2 respectively. The period 1 was most stressful for buffaloes in terms of milk yield and certain milk constituents and wallowing offered the greatest comfort. AA

CASEIN

- 928 GUPTA (MP) and GANGULI (NC). Effect of ultracentrifugal whey on the release of components from buffalo casein micelles. *Indian J. Dairy Sci.* 33(2); 1980; 259-61
- 929 GUPTA (MP) and GANGULI (NC). Electrophoretic and gel filtration studies on rennet susceptibility of buffalo casein micelles. *Indian J. Dairy Sci.* 33(2); 1980; 261-3

RASOGOLLA

- 930 BHATTACHARYA (DC) and DES RAJ. Studies on the production of Rasogolla. Part I. Traditional method. *Indian J. Dairy Sci.* 33(2); 1980; 237-43
- Conditions for standardizing the technique for preparation of rasgolla using cow milk and parameters which determine the quality characteristics of rasogollahave been reported. Channa prepared at pH 5.4 at 80 C and squeezed to retain 55-58% moisture on cooking in 50-55% fresh clarified sugar syrup for 25-30 minutes gave a good quality rasogolla. BSN

SHRIKHAND

- 931 SHARMA (UP) and ZARIWALA (IT). Deterioration of Shrikhand during storage. *Indian J. Dairy Sci.* 33(2); 1980; 223-31
- Examination of the chemical and bacteriological data have revealed that samples of Shrikhand stored at 10 ± 3 C kept well for about 40 days, as compared to those stored at 37 C, which got spoiled in one week. BSN

BUTTER

- 932 HASHEMY-TONKABONY (SE) and ASSADI-LANGAROODI (F). Chlorinated pesticide residues in butter from the Tehran region. *J. Food Prot.* 42(3); 1979; 202-3

GHEE

- 33 PRUTHI (TD). Phospholipid content of ghee prepared at higher temperature. *Indian J. Dairy Sci.* 33(2); 1980; 265-7
- 34 ZAIDI (AH), ABICHANDANI (H) and AGRAWALA (SP). Determination of particle size distribution and density of ghee residue for the development of centrifugal ghee clarifier. *Indian J. Dairy Sci.* 33(2); 1980; 244-7

CHEESE

- 35 BALAIAH (V) and JOSHI (VK). Changes in proteose-peptone and non-protein nitrogen fractions in gouda cheese during ripening. *Indian J. Dairy Sci.* 33(2); 1980; 232-6
- 36 GRAY (JI), IRVINE (DM) and KAKUDA (Y). Nitrates and N-nitrosamines in cheese. *J. Food Prot.* 42(3); 1979; 263-72
- 37 KOPP (B) and REHM (H-J). A biological assay for quantitative determination of roquefortine. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 90-1 (German)
A plate diffusion assay for quantitative determination of roquefortine with *Bacillus stearothermophilus* as test organism was developed. With this assay concentrations of 25 µg/ml could still be measured. In comparison with a fluorescence method this test is less sensitive, but just as exact and much easier to apply so that the biological assay can be considered as an additional determination. AA
- 38 MILLS (CJ), RICHARDSON (T) and JASENSKY (RD). Antimicrobial effects of N α -palmitoyl-L-lysyl-L-lysine ethyl ester dihydrochloride and its use to extend the shelf life of creamed cottage cheese. *J. Agric. Food Chem.* 28(4); 1980; 812-7

MEAT AND POULTRY

- 39 DORDEVIC (M), MATEKALO-SVERAK (V) and BOTKA (I). Comparative examination of the influence of different soy proteins on the properties of gels, emulsions and meat products. *Technol. Mesa.* 20(11); 1979; 318-20 (Serbo-Croat)
- 40 DE WIT (JC), NOTERMANS (S), GORIN (N) and KAMPELMACHER (EH). Effect of garlic oil or onion oil on toxin production by *Clostridium botulinum* in meat slurry. *J. Food Prot.* 42(3); 1979; 222-4
Garlic oil (or onion oil) when used in the proportion of 1500 µg per g of meat slurry inhibited toxin production by *Clostridium botulinum* type A (strain 73A). The inhibition, however, was not complete. Toxin production by *C. botulinum* type B (strain RIV 1) and type E (strain RIV 2) was not inhibited. It is not recommended that these oils be used for inhibiting toxin production by *C. botulinum*, as meat and meat products may contain several types of *Clostridium* sp. and not just type A. AA

- 941 MODIC (P), DORDEVIC (M), PRIHAVEC (D) and SADL (J). Possibilities of the application of fried onion concentrate in liver paste production. *Technol. Mesa.* 20(11); 1979; 324-5 (Serbo-Croat)

- 942 SEN (NP), LEE (YC) and McPHERSON (M). Comparison of two extraction procedures for recovering nitrite from crude meat products. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1186-8

BEEF

- 943 CHRISTOPHER (FM), SEIDEMAN (SC), CARPENTER (ZL), SMITH (GC) and VANDERZANT (C). Microbiology of beef packaged in various gas atmospheres. *J. Food Prot.* 42(3); 1979; 240-4

Boneless beef roasts were vacuum-packaged and one group was retained as control. The others were divided into 6 groups and a different gas mixture was injected into the bags of each of these groups. Psychrotrophic plate counts of roasts stored in modified gas atmospheres were generally higher than those stored in conventional vacuum packages. But the difference in the *Lactobacillus* counts of roasts stored under gas and vacuum-packaging respectively was only rarely statistically significant. During the later stages of storage *Lactobacillus* predominated in roasts stored under vacuum or at low O₂ pressures, while *Pseudomonas* spp. remained prominent in packages having a high O₂ content. KMD

- 944 DANIEL (JW) and MARSHALL (CJ). The metabolism of beef tallow sucrose esters in rat and man. *Food Cosmet Toxicol.* 17(1); 1979; 19-21

Because of the apparent ease with which the esters are hydrolysed under physiological conditions to sucrose and the corresponding fatty acids, the use of these materials as additives to human foods would not appear to present a significant toxicological hazard. AA

- 945 PALUMBO (SA), KISSINGER (JC), MILLER (AJ), SMITH (JL) and ZAIKA (LL). Microbiology and composition of snack sausages. *J. Food Prot.* 42(3); 1979; 211-3

Snack sausages are narrow-diameter (Ca 10-12 mm) all-beef products which are relatively dry and shelf-stable and which may or may not be fermented. The heat treatment they receive (heating or smoking) destroys most micro-organisms except the *Bacilli*. The products have a low moisture content (av. 20.6%), water activity (av. 0.78) and moisture/protein (M/P) ratio (av. 0.81). According to the Acton and Dick classification, based on M/P ratio, they are fully dry products. The yield of snack sausages prepared in a pilot plant increased from 39.6 to 51.4% when the initial fat content of the meat was increased from 7.2 to 25.7%. KMD

- 946 SEIDEMAN (SC), CARPENTER (ZL), SMITH (GC), DILL (CW) and VANDERZANT (C). Physical and sensory characteristics of beef packaged in modified gas atmospheres. *J. Food Prot.* 42(3); 1979; 233-9

196 boneless beef roasts were vacuum-packaged, and 28 were retained as such as controls. The remaining were divided into six groups and a different gas mixture was injected into the packages forming one group. Roasts stored in modified atmospheres having a high O₂ content exhibited a greater incidence of off-odour, more surface discolouration, lower overall appearance ratings, shorter retail-case life and lower overall palatability ratings than vacuum-packaged roasts, or roasts stored in an atmosphere initially containing 20% CO₂ + 80 % N₂. KMD

- 7 TRUCKSESS (MW) and STOLOFF (L). Extraction, cleanup and quantitative determination of aflatoxins B₁ and M₁ in beef liver. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1080-82

PORK

- 48 MA (C-Y) and NAKAI (S). Chemical modification of carboxyl groups in porcine pepsin. *J. Agric. Food Chem.* 28(4); 1980; 834-9
- 49 MODIC (P), DORDEVIC (M), NIKOLIC (Z) and KOMENCI (D). Examination of a new procedure for the preparation of textured vegetable proteins for the production of meat products. *Technol. Mesa.* 20(11); 1979; 314-7 (Serbo-Croat)

POULTRY

- 50 RACCACH (M) and BAKER (RC). Fermented, mechanically deboned poultry meat and survival of *Staphylococcus aureus*. *J. Food Prot.* 42(3); 1979; 214-7
- Sausages made from mechanically deboned poultry meat (MDPM) attained a pH of 4.7 after 60 hour of natural lactic fermentation and developed an acidity (expressed as lactic acid) of 1.6%. A heat treatment given to the sausages to raise the internal temperature to 60 C reduced the population of both the natural *Lactobacilli* and the added *Staphylococcus aureus*. Acid, NaCl and NaNO₂ combined with heat treatment (60 C, 60 hour) produced the largest reduction of the population of *S. aureus*, resulting in a D-value of 22.6 min. Succinic acid, in combination with either a heat treatment (60 C, 60 hour) or low temperature storage (7C, 7 days) was the most effective treatment against *S. aureus*. Other acids active against *S. aureus*, arranged in decreasing order of effectiveness were lactic, acetic and citric. KMD

EGG

- 951 NARAHARI (D). Role of nutrition on egg quality. *Poult. Guide* 17(12); 1980; 51-4
- The diet of a laying hen influences flavour, shell quality, and yolk pigmentation to a greater extent than it does the albumen index, Haugh unit score, yolk index, and incidence of blood spots and of meat spots in eggs. KMD

SAUSAGE

- 952 TRUMIC (Z), POLIC (M), OTERBAJN (O) and RANKOV (M). Application of smoke concentrate and belvit-S to semi-dry and cooked sausages. *Technol. Mesa* 20(11); 1979; 311-3 (Serbo-Croat)

SEAFOODS

FISH

- 953 CHVOJKA (R) and KACPRAZAK (JL). Use of background correction to improve the accuracy of the selective reduction method for determining methyl mercury in fish. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1179-81

- 954 HAUSCHILD (AHW) and HILSHEIMER (R). Effect of salt content and pH on toxigenesis by *Clostridium botulinum* in caviar. *J. Food Prot.* 42(3); 1979; 245-8

Under abusive conditions of storage (30 C) outgrowth and toxigenesis occurred in bottled, lump fish caviar at combinations of $\leq 3.95\%$ salt in the water phase and pH ≥ 5.2 , and of $\leq 4.67\%$ salt and pH ≥ 5.6 . No toxin was formed at salt concentrations $\geq 5.56\%$ and at pH ≤ 5.0 . A survey of commercial caviar products showed that most of these had salt-pH combinations which would effectively inhibit *C. botulinum* at abusive temperatures during storage. KMD

- 955 POULTER (RG) and LAWRIE (RA). Studies on fish muscle protein: Nutritional consequences of adding low concentrations of formaldehyde and/or linoleic acid to cod muscle. *Food Sci + Technol.* 12(1); 1979; 47-51

Low concentrations of formaldehyde and linoleic acid were added, separately and together to aqueous cod muscle homogenates and these were then stored for 20 hours at 0 C followed by 100 days at -8 C. Both formaldehyde and linoleic acid caused reduction in the amount of protein nitrogen soluble in 5% NaCl (denaturation). One per cent formaldehyde resulted in 50% loss of the available lysine content. Lower concentrations of formaldehyde, and of linoleic acid (between 0.1 and 5.0%) caused changes in the available lysine content which were too small to be of nutritional significance. Similarly 1% formaldehyde caused a severe decrease in the digestibility *in vitro* of the muscle proteins. AA

- 956 MAI (J), SHETTY (JK), KAN (T-M) and KINSELLA (JE). Protein and amino acid composition of select freshwater fish. *J. Agric. Food Chem.* 28(4); 1980; 884-5

Reports data on protein content and amino acid make up of six species of freshwater fish (white sucker *Catostomus commersoni*), burbot (*Lota lota*) black crappie (*Pomoxis nigromaculatus*), rainbow trout *Salmo gairdneri* walleye pike (*Stizostedion vitreum*) and yellow perch (*Perca flavescens*). Significant variations were not observed among the different species examined regarding composition. BSN

HERRING

- 957 SMITH (JGM), HARDY (R), McDONALD (I) and TEMPLETON (J). The storage of herring (*Clupea harengus*) in ice, refrigerated sea water and at ambient temperature. Chemical and sensory assessment. *J. Sci. Food Agric.* 31(4); 1980; 375-85

Herring caught during winter and summer were stored in ice, refrigerated sea water (RSW) and at ambient temperature. Chemical tests and a sensory assessment of the fish were made on samples stored for up to 13 days. Results indicate that herring can be chilled simply and rapidly using as RSW plant and that spoilage changes in the fish stored in ice and RSW are similar during the first 4 or 5 days of storage. The chemical tests investigated serve more as indicators of spoilage rather than quantitative guides. AA

CRAB

- 958 PERFETTI (GA) and WARNER (CR). Reverse phase ion pair high pressure liquid chromatographic determination of ethylene-diaminetetraacetic acid in crabmeat and mayonnaise. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1092-5

SCALLOP

- 59 KHALIL (MW), IDLER (DR) and PATTERSON (GW). Sterols of scallop. III. Characterization of some C-24 epimeric sterols by high resolution (220 MHz) Nuclear Magnetic Resonance Spectroscopy. *Lipids*. 15(1); 1980; 69-73

OYSTER

- 960 BURNETTE (JA), FLICK (GJ) Jr., WARD (DR) and YOUNG (RW). Comparison of composition and selected enzyme activities in *Crassostrea virginica* and *Crassostrea gigas*, Eastern and Korean oysters. *J. Food Prot.* 42(3); 1979; 251-5
- Tissues of Eastern (*Crassostrea virginica*) and Korean (*Crassostrea gigas*) oysters were analyzed for proximate composition; elemental, amino acid, and pesticide contents; and selected enzyme activities. Eastern oysters contained more nitrogen but a lower ash and lipid content. In general, the amino acid and elemental contents were higher in the Korean species. Neither the Eastern nor Korean species contained pesticides or PCBs in an amount greater than 0.1 ppm. Peroxidase activity was greater in Korean oysters while lipase activity was higher in the Eastern species. Lipxygenase was not detected in either species. AA

PROTEIN FOODS

- 961 CHAVEZ (JF). Factors to be considered in the production and introduction of high-quality protein foods. *Arch. Latinam. Nutr.* 30(1); 1980; 11-45 (Spanish)
- The factors that govern the production and introduction of high-quality protein foods have been classified and discussed under 3 major headings: Factors depending on the country itself-role of food industry and government as regards improvement of staples, availability of raw materials, health programs, etc.,; factors related to the identity of the food - ingredients, their nutritional quality and increase in price after the food is introduced in the market; and factors inherent to the consumer-preferences and personal reactions to the presentation of the food. The launching of "Incaparina" in Venezuela in 1964, and the reasons for its failure have been commented upon. KMD

FRUIT JUICES AND BEVERAGES

- 962 DAEPP (HU). Production and consumption of fruit beverages in Switzerland. *Flussiges obst.* 46(5); 1979; 156-60 (German)
- 963 GACHOT (H). The fruit juice industry in France. *Flussiges obst.* 46(5); 1979; 173-4 (German)
- 964 MANNHEIM (CH) and PASSY (N). The effect of deaeration methods on quality attributes of bottled orange juice and grapefruit juice. *Confructa*, 24(5/6); 1979; 175-87
- Hot-filling of citrus juices, followed by rapid cooling and storage at temperatures below + 15 C ensures a shelf-life of almost one year. Other methods of deaeration are not justified under the prevailing industrial conditions. The main factors governing the preservation of quality in bottled

citrus juices are (i) good, manufacturing practices, and (ii) storage temperature. KMD

- 965 MIELKE (J). Comments on the published standard values and ranges for specific indices for fruit juices. *Flussiges obst.* 46(5); 1979; 182-3 (German)
- 966 MOHL (E). Fruit juice and continuous finning. *Flussiges obst.* 46(5); 1979; 168-72 (German)
- 967 SCH (W). Fruit juices and the fruit juice industry in the United States in 1979. *Flussiges obst.* 46(5); 1979; 179-80 (German)
- 968 SCHALLER (A), VOGL (K) and WEISS (J). Results of studies on the influence of storage time on the acid-catalyzed hydrolysis of saccharose added to diluted black currant juice and diluted sour cherry juice. *Confructa.* 24(5/6); 1979; 189-94 (German)
- The acid-catalyzed hydrolysis of saccharose during the manufacture (pasteurization), storage and distribution of the juices decreases the intensity of sweetness by an unknown extent. KMD
- 969 SCHUMACHER (R). New impulses in the Swiss publicity campaign for apple juice and cider in 1979. *Flussiges obst.* 46(5); 1979; 160-4 (German)
- 970 SHAW (PE), AMMONS (JM) and BRAMAN (RS). Volatile sulfur compounds in fresh orange and grapefruit juices. Identification, quantitation and possible importance to juice flavour. *J. Agric. Food Chem.* 28(4); 1980; 778-81
- GC equipped with a flame photometric detector was employed for detecting volatile sulphur compounds in orange and grape fruit juices. While hydrogen sulphide and methyl sulphide were present in all samples, SO₂, COS, MeSH and some higher alkyl sulphides were present in some of them. At present only H₂S has been reported as a constituent of orange and grape fruit juices. As H₂S and MeSH are present in parts per billion concentration range and as the levels are higher than in air, these may probably be contributing to the flavour of fresh orange and grape fruit juice. BSN
- 971 Van der HEIJDEN (A), PEER (HG), BRUSSEL (LBP) and KOSMEIJER (JG). Colour measurements of orange, peach and apricot fruit drinks and their raw materials in relation to pasteurization and storage. *Confructa.* 24(5/6); 1979; 195-205
- Preliminary findings on the tristimulus colour measurements of beverages prepared from the above-mentioned fruits and of raw materials used for the preparation of such beverages have been reported. The influences of pasteurization conditions, storage and type of raw material used have been studied. KMD

APPLE JUICE

- 972 LUTHI (HR) and GLUNK (U). Fruit extraction and continuous finning. 3. Development of apple juice extraction and experiences during operation. *Flussiges obst.* 46(4); 1979; 111-20 (German)
- After referring to the latest publications concerning extraction of apples, its developments once more reviewed. The influence of important factors like raw material, water, temperature, microbiological aspects and

hygiene is discussed. Disturbed and approximate ideal runs of extraction in a 32 t/h diffuser are introduced and explained with the aid of graphic illustrations. His further development to a diffuser with a nominal capacity of 8.3 t/h is shown and commented. Further suggestions to his improvement are discussed. A final evaluation of products from an industrial scale with reference to quality, aroma and economy indicates to the in practice convincing extraction process. AA

- 73 DURR (P). Development of an odour profile to describe apple juice essences. *Food Sci + Technol.* 12(1); 1979; 23-6

A vocabulary to evaluate the odour of commercial apple juice essence has been developed and used for quality control. The collection, screening, use and suitability of 18 terms are described as pungent, grass like, pomace like, solvent like, fruity, floral, etherish, almond like, cooked apple like, sweet, alcoholic, fusel oil like, heavy, rancid, oily, soapy, stuffy, rotten. A panel of 15 assessors has been trained in using the vocabulary by presenting chemicals with particular odour qualities. AA

SODA

- 74 WOODWARD (BB), HEFFELFINGER (GP) and RUGGLES (DI). High pressure liquid chromatographic determination of sodium saccharin, sodium benzoate and caffeine in soda beverages: Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1011-9

TEA

- 75 ULLAH (MR) and JAIN (JC). Seasonal variations in the chlorogenic acids content of tea. *J. Sci. Food Agric.* 31(4); 1980; 355-8
- It was found that the concentration of chlorogenic acid in plucking shoot (2 leaves and a bud) varies during the harvesting season and is maximum in the monsoon season. KAR

COFFEE

- 76 BERTHAUD (J), GUILLAUMET (JL), Le PIERRES (D) and LOURD (M). The wild coffee trees of Kenya: Survey and culture. *Cafe Cacao The.* 24(2); 1980; 101-6 (French)
- 77 FOLSTAR (P), SCHOLS (HA), Van Der PLAS (HC), PILNIK (W), LANDHEER (CA) and Van VELDHUIZEN (A). New tryptamine derivatives isolated from wax of green coffee beans. *J. Agric. Food Chem.* 28(4); 1980; 872-4

COCOA

- 78 BOLLER (G). Technological aspects of liquor grinding. *Manuf. Confect.* 60(5); 1980; 53-62
- 79 LENOVICH (LM) and HURST (WJ). Production of aflatoxin in cocoa beans. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1076-9

- 980 PATTERSON (GR), TROUT (GA) and LARSON (RE). Improving world cocoa supplies. *Manuf. Confect.* 60(5); 1980; 47-51

BEER

- 981 NOUT (MJR). Microbiological aspects of the traditional manufacture of Bussa. A Kenyan opaque maize beer. *Chem. Mikrobiol. Technol. Lebensm.* 6(5); 1980; 137-42
- 982 PEACOCK (VE), DEINZER (ML), MCGILL (LA) and WROLSTAD (RE). Hop aroma in American beer. *J. Agric. Food Chem.* 28(4); 1980; 774-7
- 983 SPIEGELHALDER (B), EISENBRAND (G) and PREUSSMANN. Contamination of beer with trace quantities of N-nitrosodimethylamine. *Food Cosmet. Toxicol.* 17(1); 1979; 29-31
- Chemiluminescence detection was used to analyse 158 samples of commercially available draft, bottled and canned beers of different types for contamination with volatile nitrosamines. Of these samples, 111 (70%) were found to contain N-nitrosodimethylamine, the mean concentration being 2.7 ppb ($\mu\text{g/kg}$) and the maximum level 68 ppb. N-nitrosodiethylamine, the only other volatile nitrosamine found, was detectable in only two samples (at 0.5 and 3.0 ppb). AA

- 984 FARLEY (DR) and NURSTEN (HE). Volatile flavour components of malt extract. *J. Sci. Food Agric.* 31(4); 1980; 386-96

The essence of malt extract obtained by Likens-Nickerson concurrent steam distillation-solvent extraction apparatus was subjected to gas chromatography-mass spectrometry. 33 compounds were identified by direct examination, 14 by trapping and reinjection and 6 identified due to interference from the solvent peak by the use of charcoal adsorption peaks. It was concluded that several compounds need to be combined to stimulate malt flavour. KAR

OILS AND FATS

- 985 AITZETMULLER (K) and BOHRS (M). Determination of dimeric glycerol in monoglycerides by HPLC. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 155-8
- 986 ANGELO (AJ), LEGENDRE (MG) and DUPUY (HP). Identification of lipoxygenase-Linoleate decomposition products by direct gas chromatography mass spectrometry. *Lipids.* 15(1); 1980; 45-9
- 987 BHASKAR (A) and BELVADI (VK). Determination of BHA and BHT in edible oils and fats using HPLC. *J. Oil. Technol. Assoc. India.* 12(2); 1980; 23-4
- A method for the determination of the antioxidants, BHA and BHT in edible oils and fats, based on reversed phase partition chromatography and UV detection, has been described. The method is direct and does not require any pre-separation of these compounds from the sample matrix prior to their determination. The sensitivity of the method is about 25 p.p.m. of each antioxidant in the oil samples. KMD

- 988 FUNES (J), YONG (S) and KAREL (M). Changes in lysozyme due to reactions with volatile products of peroxidizing methyl linoleate. *J. Agric. Food Chem.* 28(4); 1980; 794-8
- 989 ITOH (T), SAKURAI (S), TAMURA (T) and MATSUMOTO (T). Occurrence of 24(E)-Ethylidene sterols in two solanaceae seed oils and rice bran oil. *Lipids.* 15(1); 1980; 22-5

SPICES AND CONDIMENTS

- 990 BALASUBRAMANYAM (N), BALDEV RAJ, INDIRAMMA (AR) and ANANDASWAMY (B). Evaluation of polypropylene and other flexible materials for packaging of ground spices. *Indian Spices.* 18(2); 1980; 15-20
- Packaging and storage studies on ground pepper and turmeric were conducted using the following packaging materials: 200 and 350 guage polypropylene 250 guage low density printed polyethylene, double pouch of MSAT cellophane inside and 250 guage printed polyethylene pouch outside, and double pouch of glassine gusset pouch inside and 250 guage printed polyethylene outside. Storage was done at 92% RH and 38 C, 30-40% RH and 40 C, and 65% RH and 27 C. Results indicated that a storage moisture content of about 12.0% (dry weight basis) for both the spice powders was safe with respect to free flow characteristics and microbial spoilage. Both 200 and 350 guage polypropylene pouches were found inadequate (though slightly better than low density polyethylene) to offer desired protection against volatile and moisture losses during storage. At high temperature nearly 60-70% of volatile oil in turmeric and 70-80% in pepper was lost during 150 and 130 days of storage respectively resulting in polyethylene and polypropylene packages becoming sticky and messy with oil droplets collecting on the surface of pouches during storage. The loss of volatile oil also resulted in smudging and disfiguring of printing on the printed polyethylene packages containing turmeric powder. MVG

CAPSICUM

- 991 DiCECCO (JJ). Spectrophotometric difference method for determination of capsaicin. *J. Assoc. Off. Anal. Chem.* 62(5): 1979: 998-1000
- Capsaicin is extracted from capsicum spice with acetone. The extract is cleaned up on an activated alumina column and assayed by using a spectrophotometric difference method (SDM). The coefficient of variation of replicate samples for 2 pungency levels was 0.36%. The correlation coefficient between the organoleptic assay and SDM was 0.95. AA
- 992 RAMOS PALACID (J). Further study of the spectrophotometric determination of capsaicin. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1168-70
- This study has been undertaken to clarify the previous work on the determination of capsaicin so that the results will be more uniform. For a good colorimetric reaction, the ethyl acetate should have a low water content; 0.1% is optimum concentration for vanadium oxytrichloride. In samples with low Scoville rating, paprika pigment can interfere with the analysis. The absorbance due to this pigment has been studied to determine the absorbance due to capsaicin. AA

SENSORY EVALUATION

- 993 BASKER (D). Polygonal and polyhedral taste testing. *J. Food Qual.* 3(1); 1980; 1-10

The principle of the triangular taste test was extended by increasing the size of the polygon, i.e., the number of samples presented simultaneously. Statistically significant differences between two samples could then be detected by small numbers of assessors. Further extension of the principle permits differences to be detected amongst three or four samples. A worked example is given. AA

- 994 BOGATY (H), TWITTY (M) and TALMAGE (JM). Correlation of deformation properties with subjective hardness of chewing gum sticks. *J. Texture Stud.* 10(3); 1970; 231-44

A modified deformation theory for the parallel-plate plastometer, with empirical assumptions that the material obeys the "power law" and that elastic components are negligible, appears to apply to chewing gums of varying degrees of subjective staleness. Data for apparent viscosity correlate with panel perceptions of initial hardness of chew. Thickness-time curves generated in plastometer tests can be fitted by either of two different algebraic functions whose constants also reflect the subjective hardness. These equation constants vary in a regular way with changes in the forces employed for deformation so that comparisons under different test conditions are facilitated. AA

- 995 ELFAK (AM), PASS (G) and PHILLIPS (GO). Rheological properties of hydrocolloids in the presence of sucrose and milk. *J. Texture Stud.* 10(3); 1980; 271-9

Apparent viscosities of guar gum, locust bean gum, and sodium carboxymethylcellulose were measured at shear rates of $16\text{--}2620\text{s}^{-1}$ in water, sucrose, milk and sucrose/milk solutions. The effect of different heat treatments was also studied. For all solutions, a power law equation described the variation of relative viscosity with shear rate allowing comparison of their non-Newtonian behaviour. With the neutral hydrocolloids, the hydration was limited by the presence of sucrose and milk which reduced the effective length of the polymer molecules. The behaviour of the polyanionic hydrocolloid, Na CMC, although influenced by milk and sucrose separately, was controlled by milk in a milk/sucrose mixture. This is due to milk salts which reduced the intramolecular repulsions along the polyanion and substantially lowered its effective hydrated length. AA

- 996 MOSKOWITZ (HR), JACOBS (B) and FITCH (D). Distinguishing actionable versus inactionable attributes. *J. Food Qual.* 3(1); 1980; 47-60

This paper distinguishes between two classes of product attributes, actionable attributes and inactionable ones. Actionable attributes are those which (a) can be optimized by varying the types and levels of ingredients in a product and (b) probably reflect true sensory or perceptual responses to products. Examples are sweetness, fragrance, softness, and the like. Inactionable attributes are those which cannot be optimized in this way, no matter what type or level of ingredient is varied. These inactionable attributes may reflect alternate ways of saying "degree of liking". Actionable attributes can be distinguished from inactionable ones by contrasting the attribute profile or existing products versus ideal products, or versus concepts when products, concepts and ideals are profiled on the same attributes and

scales. This must be done in the same study, however. AA

- 997 PAULUS (K), ZACHARIAS (R), ROBINSON (L) and GEIDEL (H). Scoring tests with prescribed scale as an essential process of sensory analysis. *Food Sci + Technol.* 12(1); 1979; 52-61

The transformation of characteristic impressions, which can be analysed sensorily, can be made easy, if the individual ranges of the scale are characterised for the individual characteristics as extensively as possible. In order to make the examination objective and also to obtain precise results, the scale must be supplemented with specific evaluation scheme. A scale range with $n > 9$ or $n < 3$ is considered less sensible. The question, however, is whether it is sensible to utilize the possibilities between $n = 3$ and $n = 9$ extensively. Probably a third scale with $n = 6$ would be sufficient to complete the average range of accuracy. Ranges and limiting values for the scoring tests with a nine point scale have been suggested and discussed. Practical methods have been mentioned. KMD

- 998 PELEG (M). A note on the sensitivity of fingers, tongue and jaws as mechanical testing instruments. *J. Texture Stud.* 10(3); 1980; 245-51

- 999 ZACHARIAS (R) and TUORILA (H). Taste threshold values for metallic salts in different media. *Food Sci + Technol.* 12(1); 1979; 36-40

The detection and recognition thresholds for "metallic" taste were determined in various test media such as water, orange juice and milk. Ferrous sulphate was chosen as a model substance. The following detection thresholds were found : 3 mg Fe/l in water, 15 mg Fe/l in orange juice and 1 mg Fe/l in milk. The values found for the recognition threshold were: 10 mg Fe/l in water, 66 mg Fe/l in orange juice and 30 mg Fe/l in milk. In actual practice, the listed concentrations of iron should, however, given an indication of the presence of a metallic off taste in cases where the iron concentration is known. AA

INFESTATION CONTROL AND PESTICIDES

- 1000 AHMAD (N). Cleanup of biological samples for determining p'-DDT and its metabolites. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1150-4

- 1001 ATTIA (FI), SHANAHAN (GJ) and SHIPP (E). Synergism studies with organophosphorus resistant strains of the Indian meal moth. *J. Econ. Entomol.* 73(2); 1980; 184-5

- 1002 BHIRUD (KM) and CHAUHAN (YS). Marketing of pesticides in India. *Pesticides.* 14(8); 1980; 3-6

- 1003 COHEN (E) and CASIDA (JE). Inhibition of *Tribolium* gut chitin synthetase. *Pestic. Biochem. Physiol.* 13(2); 1980; 129-36

- 1004 COHEN (E) and CASIDA (JE). Properties of *Tribolium* gut chitin synthetase. *Pestic. Biochem. Physiol.* 13(2); 1980; 121-8

- 1005 COLLINS (C), KENNEDY (JM), FAHMY (MAH) and MILLER (T). Mode of action of sulfenylated carbamates: Rapid conversion of N, N'-thiodicarbamates to parent

carbamate measured by neurophysiological bioassay. *Pestic. Biochem. Physiol.* 13(2); 1980; 158-63

- 1006 ISHAAYA (I), YABLONSKI (S), SIMON ASCHER (KR) and CASIDA (JE). Triphenyl and tetraphenyl derivatives of group V elements as inhibitors of growth and digestive enzymes of *Tribolium confusum* and *Tribolium castaneum* Larvae. *Pestic. Biochem. Physiol.* 13(2); 1980; 164-8
- 1007 LUHNING (CW), HARMAN (PD), SILLS (JB), DAWSON (VK) and ALLEN (JL). Gas-liquid chromatographic determination of bayer 73 in fish, aquatic invertebrates, mud and water. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1141-5
- 1008 VOSS (G). Cholinesterase autoanalysis : a rapid method for biochemical studies on susceptible and resistant insects. *J. Econ. Entomol.* 73(2); 1980; 189-92

BIOCHEMISTRY AND NUTRITION

- 1009 ANANDA RAO (G), MANIX (M) and LARKIN (EC). Reduction of essential fatty acid deficiency in rats fed a low iron fat free diet. *Lipids.* 15(1); 1980; 55-60
- 1010 ANG (CYW). Stability of three forms of vitamin B₆ to laboratory light conditions. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1170-3
- 1011 ANON. Energy-protein malnutrition and behavior. *Nutr. Rev.* 38(4); 1980; 164-7
 Resume of a conference held on the subject in Washington sponsored by the Joint U.S.-Japan malnutritional panels. BSN
- 1012 ANON. Morbidity in breast feed and artificially feed infants. *Nutr. Rev.* 38(3); 1980; 114-5
- 1013 ANON. Nutritional adequacy of breast feeding. *Nutr. Rev.* 38(4); 1980; 145-7
- 1014 CERNA (M) and LUKAS (A). Quality of raw materials and animal food products used for making baby food. *Prumysl Potravin.* 30(5); 1979; 250-1 (Czech)
- 1015 EGBERG (DC). Semiautomated method for niacin and niacinamide in food products Collaborative Study. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1027-30
 A collaborative study was conducted comparing a semiautomated colorimetric niacin method with a manual colorimetric and a microbiological method for 10 food products. Seven laboratories and the microbiological method, 7 laboratories used the manual colorimetric method, and 6 laboratories used the semiautomated method. The semiautomated method was more repeatable within a laboratory and more reproducible between laboratories than was either of the other methods. The semiautomated method results compared favourably with both the microbiological and manual colorimetric method results
 AA

- 16 EGBERG (DC). Semiautomated method for riboflavin in food products: Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1041-4

A collaborative study was conducted comparing a semiautomated riboflavin method with a manual riboflavin method for 10 food products. Six laboratories provided results from the semiautomated method and 16 laboratories used the manual technique. The semiautomated method was more repeatable within a laboratory and more reproducible between laboratories than was the manual method. The semiautomated method results compared favourably with the manual method for all 10 products. AA

- 17 EVANS (GW). Normal and abnormal zinc absorption in man and animals: the tryptophan connection. *Nutr. Rev.* 38(4); 1980; 137-41

- 18 FLORES (M) and BENT (VW). Family food basket. Definition and methodology. *Arch. Latinam. Nutr.* 30(1); 1980; 58-74 (Spanish)

The cost of the 'Family food basket' is an important statistical index that is used to fix the minimum wages for different socioeconomic groups. The differences between the 'food basket' and the 'minimum cost recommended diets' have been brought out. An example is given of the calculation of the 'family food basket of El Salvador' on the basis of information obtained from nation-wide, food consumption surveys. KMD

- 19 KABARA (JJ). Lipids as host-resistance factors of human milk. *Nutr. Rev.* 38(2); 1980; 65-73

- 20 MULDER (FJ), De VRIES (EJ) and BORSJE (B). Analysis of fat-soluble vitamins. XXII. High performance liquid chromatographic determination of vitamin D in concentrates: Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(5); 1979; 1031-40

A collaborative study was carried out which compared the official chemical method (43.B14-43.B24), the HPLC method according to Hofsass *et al.*, including maleic anhydride treatment, and the HPLC procedure according to De Vries *et al.* for vitamin D concentrates. A total of 396 samples were distributed to 33 collaborators for analysis. Five laboratories performed both the chemical and the HPLC methods. Five laboratories performed the Hofsass method and 16 laboratories performed the De Vries method. The results for the chemical method agreed with the theoretical values for the samples, and the standard deviation was comparable to that obtained in previous AOAC collaborative studies. Collaborative results for the Hofsass method were low. In addition, incorrect use of a fixed conversion factor (1/0.586) and necessity of a double chromatographic system on a non-treated and a treated vitamin D sample reduce the effectiveness of the method. There were no adverse reactions to the De Vries HPLC method. It is recommended that the method be adopted official first action as an alternative procedure for determining vitamin D in concentrates, excluding powders containing irradiated dehydrocholesterol. AA

- 1021 RAMAKRISHNAN (TV) and FRANCIS (FJ). Autoxidation of carotenoids and their relative polarity. *J. Food Qual.* 3(1); 1980; 25-34

The relative polarity and autooxidative susceptibility could be correlated only in 5 carotenoids (β -carotene, apo-8'-carotenol, cryptoxanthin, canthaxanthin, and zeaxanthin). It was evident that the unsubstituted β -ionone ring was the most susceptible structure for oxidative changes. Substitution in the 3-position of the β -ionone ring offered some stabilizing influence and zeaxanthin offered the greatest resistance to autoxidation. KAR

- 1022 WOLFE (P) and TROWBRIDGE (FL). Dietary intakes of preschool children in La Paz, El Salvador, C.A. *Arch. Latinam. Nutr.* 30(1); 1980; 49-57

The intake of calories, protein and retinol equivalents of 1-4 years old children were estimated using a 24-hour recall technique. The average calorie intake was 866 k cal (76% of the recommended intake), protein intake was 31.3 g (110% of the recommended level), and the retinol equivalent intake was 95 µg (36% of the recommended level). These results are similar to those obtained during Sept.-Oct. 1965. KMD

TOXICOLOGY AND HYGIENE

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